PUBLIC ATTITUDES TOWARDS COASTAL DEVELOPMENT

Technical Supplement No. 2

A report on two surveys of public perceptions and attitudes undertaken in developing the Virgin Islands Coastal Zone Management Program

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TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

LIST OF TABLES

LIST OF TABLES (cont'd)

LIST OF FIGURES

Abstract

Of the eight studies undertaken in the development of the Virgin Islands Coastal Zone Management Program, the Public Attitude Survey was one of the most valuable. The information used by the survey gave insight into what the public's needs and concerns were in relation to a host of coastal related issues ranging from conservation to industrial development.

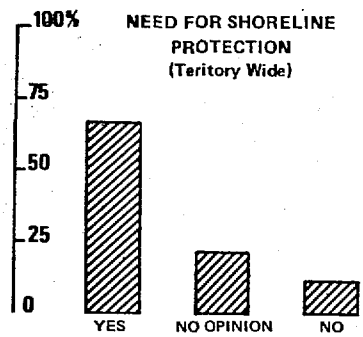
The survey was undertaken according to standard scientific methods for ascertaining public opinion. Two approaches were used: an informal newspaper questionnaire in the local newspapers, and a more detailed household survey conducted by interviewers on all three islands. The data collected was analyzed by computer and is summarized here.

It is interesting to note that the respondents' length of residence in the Territory did not appear to influence opinions. However, opinions on many issues did seem to vary by Island and level of education.

THE NEED FOR SHORELINE PROTECTION

Seventy percent of the household respondents and ninety-seven percent of all newspaper respondents feel some shore areas need protection from over-development. Less that eight percent of those questioned are opposed to shoreline protection and regulations. Rationales for protection included both statements of appreciation for an area's amenity qualities and concern about possible negative effects induced by development.

When asked which areas were in need of protection, respondents nominated those areas highly valued in terms of recreation, scenic, and/or natural qualities. Sand beaches, harbors with waterfront parks, and undeveloped mangrove areas are given highest priority. Strong support



Source: VICZM Household Survey

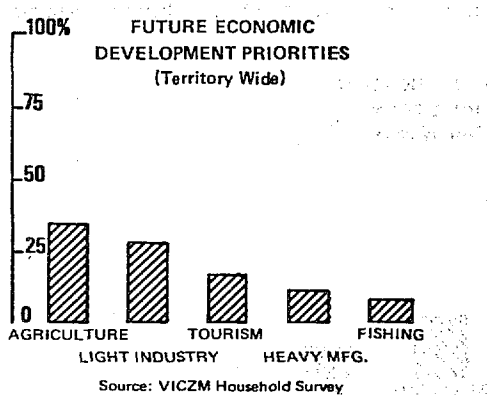
is also given to the protection of some undeveloped salt ponds and rocky shores, as well as intensively developed harbor areas. Those surveyed generally feel new construction could best be accommodated in areas which already have some development, particularly habor or industrial areas and low relief or steep rocky shorelines. To a lesser extent, gravel or rocky beaches and salt ponds are also considered suitable for development.

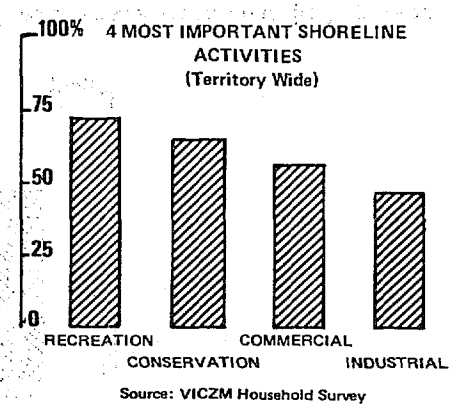
ATTITUDES TOWARDS DEVELOPMENT

While there is apt to be considerable disagreement among some population groups as to the importance of economic development, there is a consensus Territory-wide that agriculture and food processing should be encouraged.

The extent of support for tourism varies among the Islands, but respondents across the Territory indicate a preference for hotel/guest house and cruiseship related development over other forms of tourism.

The great majority of respondents agree that coastal recreational development is important. There is considerable support throughout the Territory for the improvement of beach access, and to a lesser extent, beach facilities. The newspaper survey provided considerable information about existing patterns of recreational activity, including a listing of beaches where access is considered an issue. Poor roads or an exclusively private atmosphere are the most frequently cited obstacles, although the lack of facilities and safety are also concerns.





DEVELOPMENT PRIORITIES BY ISLAND

ST. CROIX

Recreational development, and beach access in particular, is of greater concern on St. Croix than on the other two islands. Respondents from Christiansted voiced the strongest concern. Compared with St. Thomas and St. John, concern about conservation is greater, but less interest is expressed in commerce and industry. Agriculture and light industry are clearly the most preferred and widely supported development options. However, the percentage of population favoring heavy industry is larger than on St. Thomas and St. John.

Interest in fishing and tourism is weaker in St. Croix than the other two islands. Attitudes toward tourist development are reflective of the Territorial preference for hotel/guest houses and cruise ships. Support for condominium/second home development is stronger on St. Croix than on the other islands.

ST. THOMAS

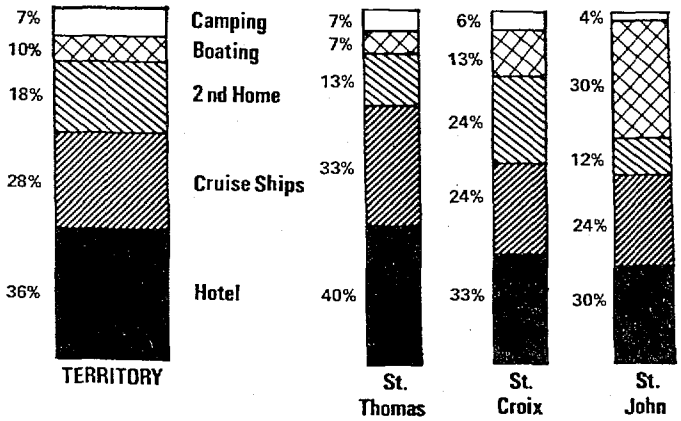
The survey results on St. Thomas indicate that industrial and conservation uses are a high priority and while recreational and residential development are not a high priority, they are recognized as being important. Respondents are more united in their support for agriculture, light industry, and, to a lesser extent, tourism as modes of economic development. Regarding tourism, there was agreement with the Territory-wide preference for hotel/guest house and cruise ship development. Respondents also support other Territorial-wide recreational concerns. Beach access is paramount, but beach facilities, fishing piers and waterfront parks are concerns in certain areas.

ST. JOHN

Residential and commercial development are of greatest concern according to the survey results from St.John. Interest in conservation is less widespread. Respondents express very little interest in industrial uses. Stronger support is given to the development of agriculture, tourism, and fishing. Interest in fishing and tourism is stronger on St. John than anywhere else in the Virgin Islands.

With respect to tourism development, respondents express a clear support for the Territory-wide preference for hotel/guest houses and cruise ships. In addition, there is equally clear and strong support for developing boating. While recreational development is rarely considered to be a first priority, it is widely acknowledged as important. There is considerable support for the development of waterfront parks and fishing piers.

TOURIST DEVELOPMENT PRIORITIES



Source: VICZM Household Survey

1

INTRODUCTION AND OVERVIEW

Public Attitudes as an Input to the Virgin Islands' CZM Program

The U.S. Congress passed the Coastal Zone Management Act (Public Law 92-583) in 1972 to stimulate state and territorial leadership in managing the Nation's coastal land and water resources. Spurred by this Act, as well as by problems resulting from rapid and unplanned growth, the Virgin Islands began work on its own Coastal Zone Management Program in early 1975. The Virgin Islands Planning Office, which has responsibility for the program, is developing both a plan and appropriate mechanisms for regulating coastal resource use.

As Figure 1 indicates, identifying the best use of scarce and fragile resources has involved a variety of technical analyses, including not only assessments of resource capabilities and economic demand factors, but also a study of public attitudes regarding utilization of coastal areas. It is this study that is reported here.

This chapter presents first the underlying rationale and objectives of surveying public attitudes regarding coastal development, and then a brief overview of the report. Study methods are detailed in Chapter II while Chapter III elaborates on study results and their implications. Chapter IV summarizes survey findings in light of their utility in developing the Territory's Coastal Zone Management Program.

Purpose of the Surveys

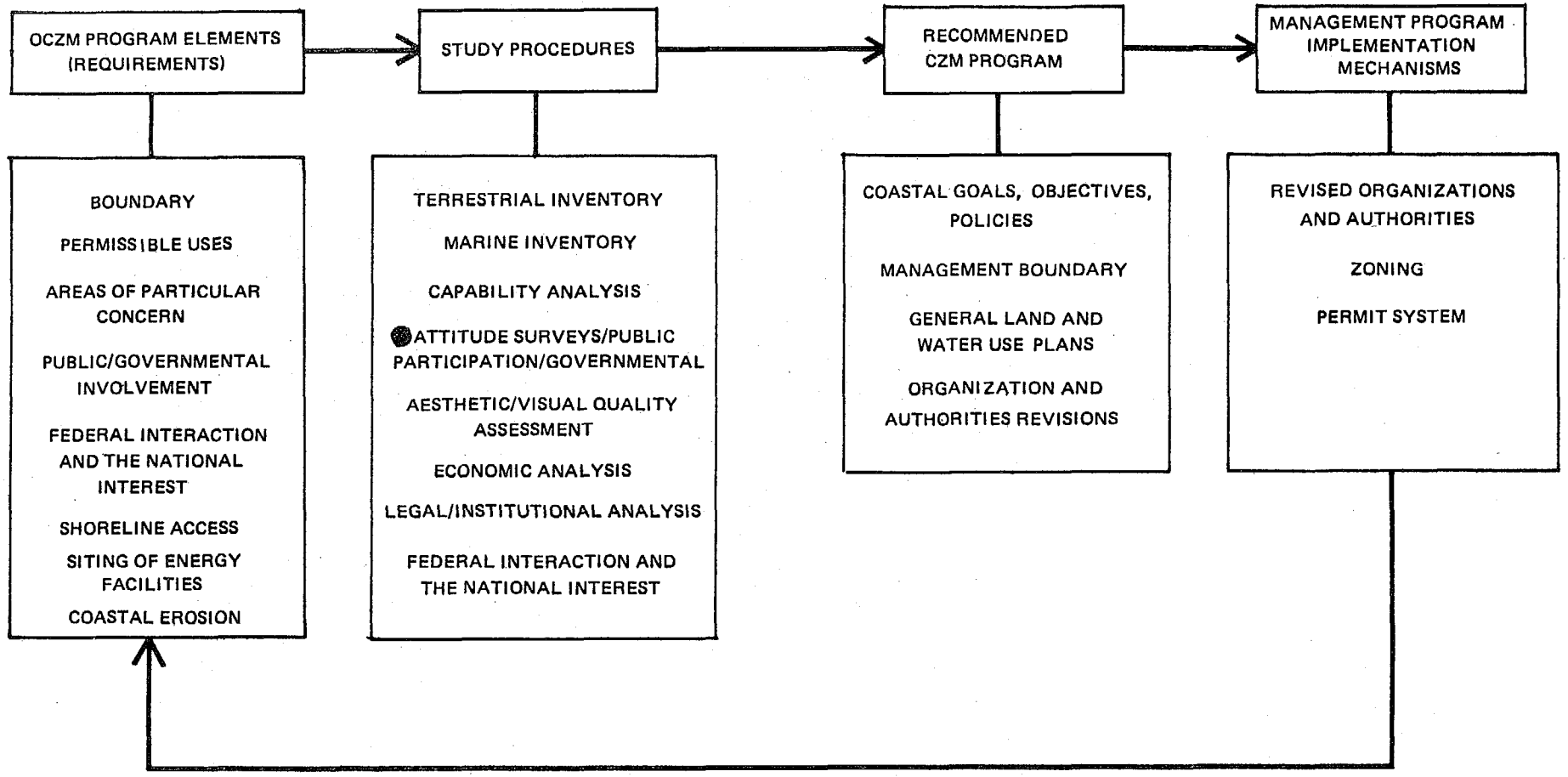
SURVEYING THE GENERAL PUBLIC

Determining public attitudes towards any issue is obviously made difficult by the fact that the public speaks with many voices. For this reason, elected officials and community and interest groups leaders are generally relied upon to assess and to articulate their constituents' interests. If the issues are clear cut and have received widespread attention, this is a resonable and certainly the easiest means of gauging public sentiment.

However, in the Virgin Islands, growth and development since the early sixties has resulted in substantial changes in the landscape, the population and their way of life. Traditional attitudes and values appear to be changing rapidly. Accordingly, extrapolation of public sentiment from the past seems precarious. While public reactions to current events provide some indication

FIGURE 1

CZM PROGRAM DEVELOPMENT PROCESS



of attitudes towards coastal development, it is far from adequate. This is of particular concern since coastal resource utilization is an important determinant of growth and development in the Territory as a whole. Surveying the public-at-large seemed called for. The Planning Office used the results of these surveys to supplement information obtained from contacts with local officials, leaders, and groups.

EDUCATIONAL AND INFORMATIONAL FUNCTIONS

There were two other reasons for surveying public attitudes. It was anticipated that the surveys would have both educational and informational functions. Questions were designed not only to obtain needed information, but also to encourage participants to be more conscious of coastal resources; to think about their value and utilization in fresh ways. Moreover, the surveys provided a novel vehicle for making people aware of, and hopefully, interested in the Coastal Zone Management Program. It was hoped that interest would lead to active participation in program development.

APPROACH

In May of 1976, a questionnaire was inserted in all local newspapers. It dealt with personal recreational habits, perceptions of existing and future shoreline use, plus attitudes toward development of different shoreline areas. It was anticipated that the primary value of the survey would be educational; being an interesting means of communicating information through the news media. Its value as a vehicle for public input was secondary. It was expected that response would reflect the opinions of people with the time, interest and ability to fill out and return the questionnaire -- in all probability a somewhat more educated and affluent group.

To obtain a sample which would be more representative of residents as a whole, a program of household interviews was conducted over the summer. Interviews also permitted probing some of the newspaper survey questions in greater detail.

A unique aspect of the household survey was the utilization of photographs depicting the various types of shoreline areas found in the islands. These provided a focus for questions regarding shoreline use, as well as for assessments

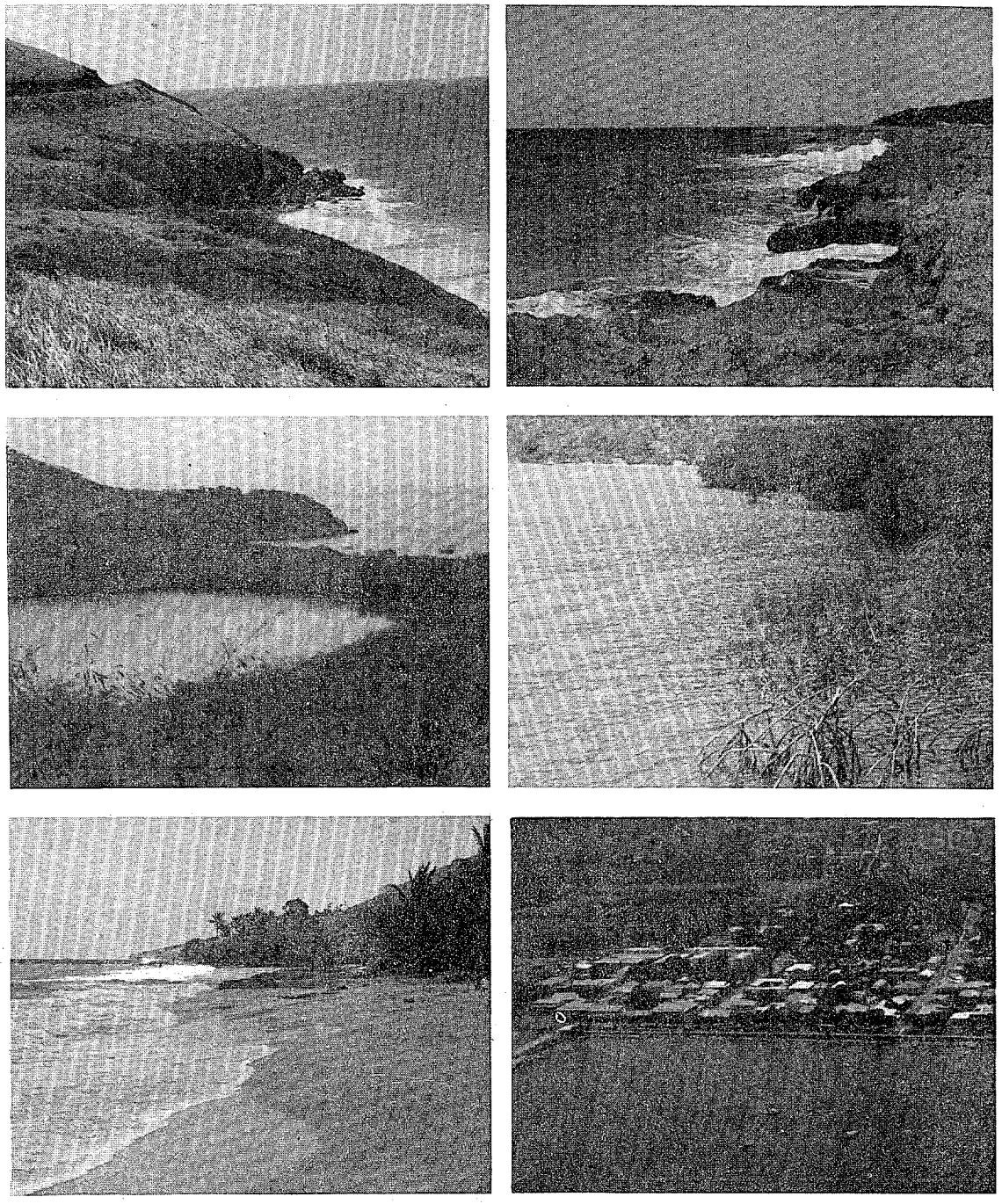


Figure 2a - Examples of shoreline environments (from top): steep rocky shore; low relief shore; salt pond; mangrove stand; sand beach; developed shore.

of visual quality. Assessment of the different types of coastal areas has been a central feature of the Territory's CZM Program. The concept of coastal environments is grounded in the assumption that areas which have similar characteristics also have similar potentials and constraints for use, and therefore similar management requirements. Classification of all shoreline and marine areas was based on soils, vegatation, slope, erosion susceptibility, and use attributes. Thirteen distinct coastal environments were identified:

Shoreline Environments:	Developed shorelines
	Steep rocky shorelines
	Low relief shorelines
	Salt ponds
	Beaches
	Mangrove stands
Marine Environments:	Marine meadows (grass beds)
	Sand bottoms
	Rocky bottoms
	Developed bottoms
	Reefs
	Open water
Off-shore islands and cays	

Developing management recommendations for each of the different coastal environments involved weighing environmental, economic and social considerations. Both surveys, but particularly the household survey, were designed to assess public perceptions of the shoreline environments and the relative values associated with each. To this end, each of the six shoreline environments was further sub-divided to assess differences in perceptions based on the type and amount of development. Developed shorelines were divided into industrial and harbor sub-classes. The others were divided into undeveloped and some development sub-classes. Also investigated were interviewees' attitudes regarding coastal development priorities, tourist assets, recreational opportunities and coastal problems. Demographic and geographic data were collected to distinguish differences in opinion between population sub-groups.

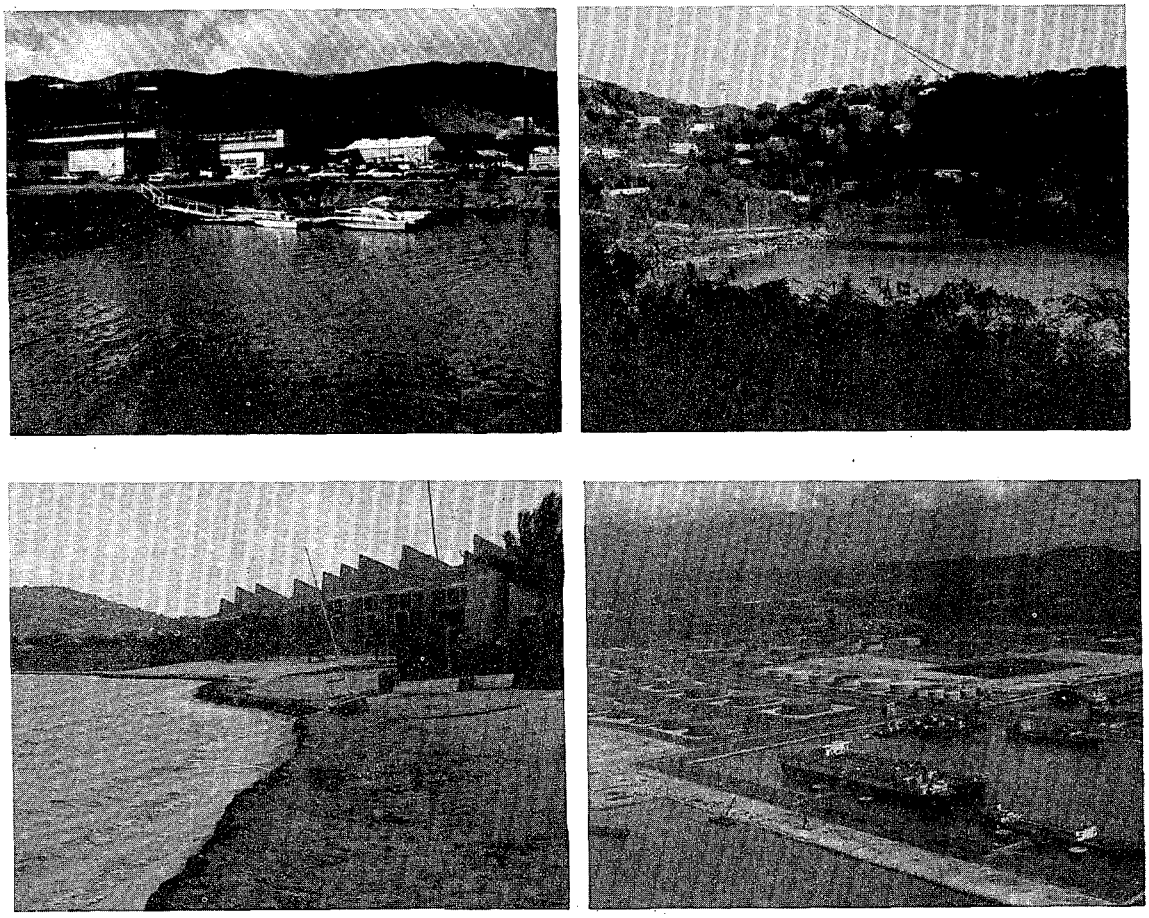


Figure 2b - Examples of shoretype sub-classes (from top): developed - harbor; developed - industrial; beach with some development; salt pond with some development.

THE SAMPLE POPULATION; A PROFILE

While it has been difficult to assess the success of these surveys in terms of educational objectives, they did produce a great deal of useful information. Not only do they provide a good indication of the economic, amenity, and ecological values which the public associates with coastal areas, but also their relative importance as reflected in attitudes towards shoreline utilization.

Sex, age, occupation, and length of residence in the Territory were not found to have a significant bearing on respondents' views, but island of residence and level of education in many instances were. The newspaper survey sample, as anticipated, was relatively small (154 respondents) and more reflec-

tive of the views espoused by the better educated household survey respondents. The household survey sample, however, was considerably larger (743 respondents) and more representative of the population as a whole.

Survey data thus suggest areas of both public consensus and dissension. Strong consensus appears to exist about: the importance of coastal recreation and improving beach access; the encouragement of agriculture; the recognition of water pollution as a significant problem; the high value attached to sand beaches, undeveloped mangroves, and some harbor areas; and the importance of protecting such areas from overdevelopment.

There is considerably less agreement, however, on over-all development priorities. Attitudes towards development tend to be associated with educational background, with the more educated favoring amenity and natural considerations and the less educated stressing economic ones. Attitudes towards future development also vary considerably among the islands. Island development priorities seem to reflect not only residents' perceptions of what is desirable, but also what is feasible given island resources.

Considering survey response as a whole, respondents seem to give less weight to economic considerations than was anticipated. While concern about economic development is by no means negligible, it appears to be tempered by a widespread concern for the natural and amenity attributes of the coast. The impact of development on sand beaches, harbors, and mangrove stands seems to be of greatest concern.

Judging from respondents' comments, there is substantial support for both planned coastal development and "going to the people" for guidance. There was however, some skepticism that survey results would be heeded or that effective management of our coastal resources would ever occur.

The composition of the population has altered greatly in the past fifteen years, and further changes can be anticipated. The surveys provide at least a tentative indication of the influence of such shifts on public attitudes. Concerns about the type and location of future coastal development tend to be most strongly influenced by educational background and by island of residence. They are not associated with length of residence per se. Thus the assumption that neat distinctions can be made between the views of native Virgin Islanders, continentals, and aliens would appear to be unjustified.

What is perhaps clearer, is that since educational levels are generally rising, further shifts in public values and attitudes may be anticipated along the lines indicated by the household survey -- towards a balance among economic, ecological, and amenity considerations.

Recreational use of the shoreline, and particularly sand beaches, has widespread support.

2

SURVEY TECHNIQUES

This chapter describes how both Coastal Zone Management surveys were designed and carried out. The household survey is discussed first, and then the newspaper questionnaire.

Household Survey

INTERVIEW FORMAT

The household survey consisted of two components:

1) Three panels of photographs -- the first, depicting the various types of shorelines found in the Territory; the second, shoreline examples from the respondents' island; the third, examples of different types of shoreline uses.

2) A set of twenty-five questions, focusing on the assessment of shoreline value, and appropriate utilization.

The photographs were intended to serve several purposes. As illustrative examples of shoretypes and coastal uses they provided respondents with a common understanding of terminology used in the questions (shoreline, industry, commerce, residential, recreation/parkland), as well as a shared understanding of the range of areas encompassed by both the questions and the Coastal Zone Management Program. Second, the photographs served as concrete stimuli for what would otherwise be rather abstract questions. Third, having a series of questions focussing on the photographs permitted assessment of respondents' perceptions of a single shoretype relative to both economic and amenity issues. Lastly, the photographs added visual interest and variety to the somewhat lengthy interview format.

The four shoreline photo panels were made of fifteen 2½"x3½" color prints arranged in three columns of five prints each, and mounted on 16" x 11" white cardboard: one with Territory-wide shoreline examples, plus one for each of the three main islands. The photograph panel depicting shoreline use was of the same size, but had ten 3" x 5" black and white photos arranged in two columns of five each (Appendix A). The photograph set employed in each interview consisted of three panels: Panel A - the Territory-wide shoreline panel; Panel B- island shoreline panel; and Panel C - the shoreline use panel. These were bound as a folio with a cardboard cover for ease of use.

The interview schedule (Appendix A) used a force-choice response format for all but three questions. While this approach admittedly limits participants' responses, it was necessary to obtain comparable and quantifiable data suited

to statistical analysis. A measure of freedom was provided in some instances by the opportunity to specify a different response under "other". For three questions however, free responses were permitted: reasons for shoreline protection; occupation; and respondent comments.

SAMPLING PROCEDURE

Time, logistical and financial constraints dictated a relatively small sample: 300 interviews each were planned on St. Croix and St. Thomas, plus 75 interviews on St. John. Samples were drawn from island sub-areas in proportion to population distribution. This was done to permit analysis of responses in terms of geographic as well as demographic variables. The survey sub-areas (Maps 1-3) are units which are relatively homogeneous with respect to physical and demographic characteristics, as well as having a common physical orientation towards particular coastal and/or urban areas.

Population data were taken from the recently completed Virgin Islands Mass Transit Study[1] rather than from the 1970 U.S. Census. This was done because the Mass Transit Study contains 1975 population estimates incorporating corrections for widely acknowledged errors in the 1970 census data. Moreover, since these population estimates were for sub-divisions of the census enumeration districts, they could be aggregated so as to coincide with the planning areas to be surveyed.

After population distribution was determined, the proportionate sample size for each planning area was calculated. Selection of households to be surveyed involved scanning a list of all tax properties in a given planning area and randomly selecting developed residential properties to generate the correct sample size (e.g. every nth property depending on the number of properties and sample size per area). When tax data indicated a parcel was not improved or was non-residential and therefore contained no household, the next improved residential lot in the list was substituted. Tax data provided addresses and were used to map all parcels to be sampled.

One drawback to this approach was noted and corrected. Single-family homes were as likely to be chosen as properties with multiple units. While

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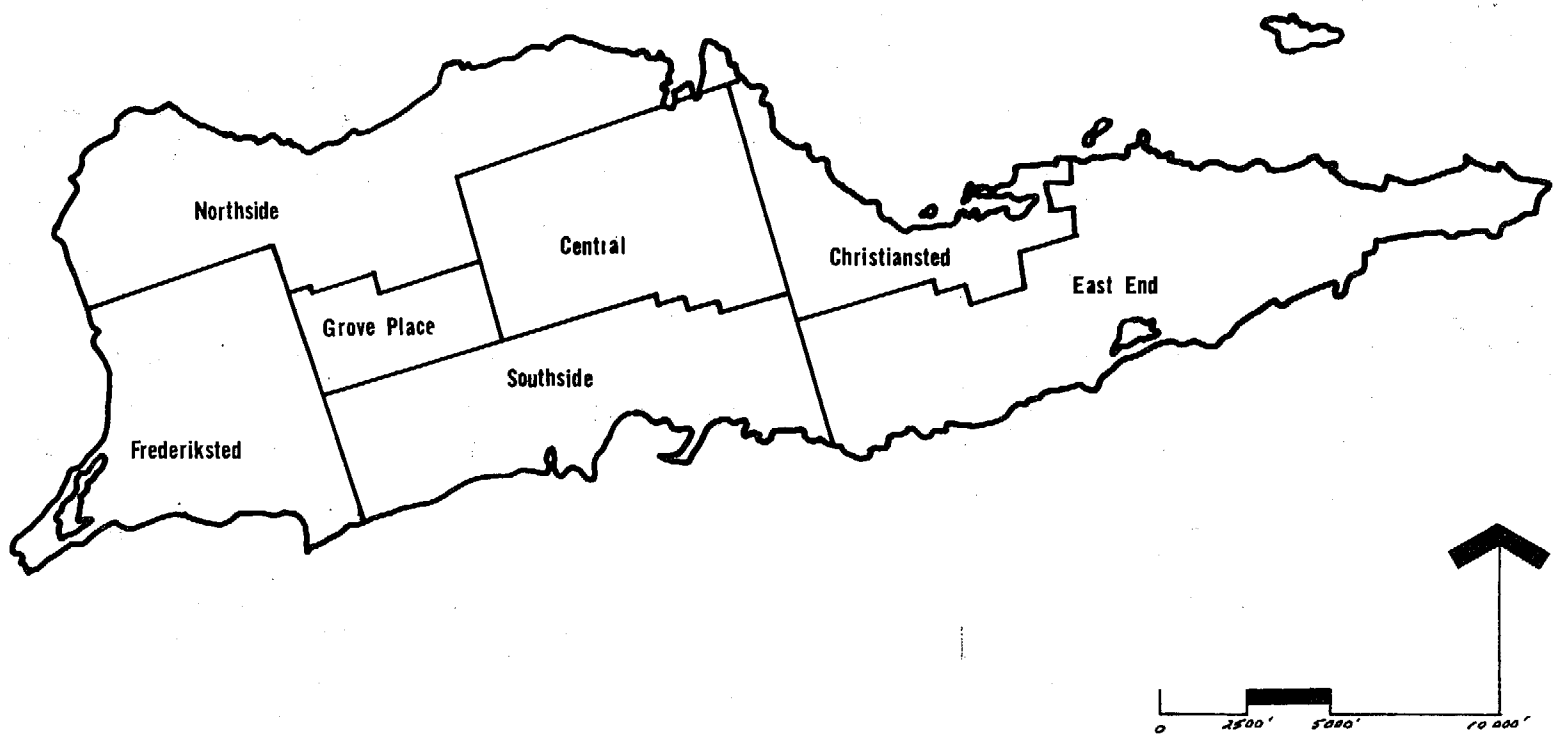
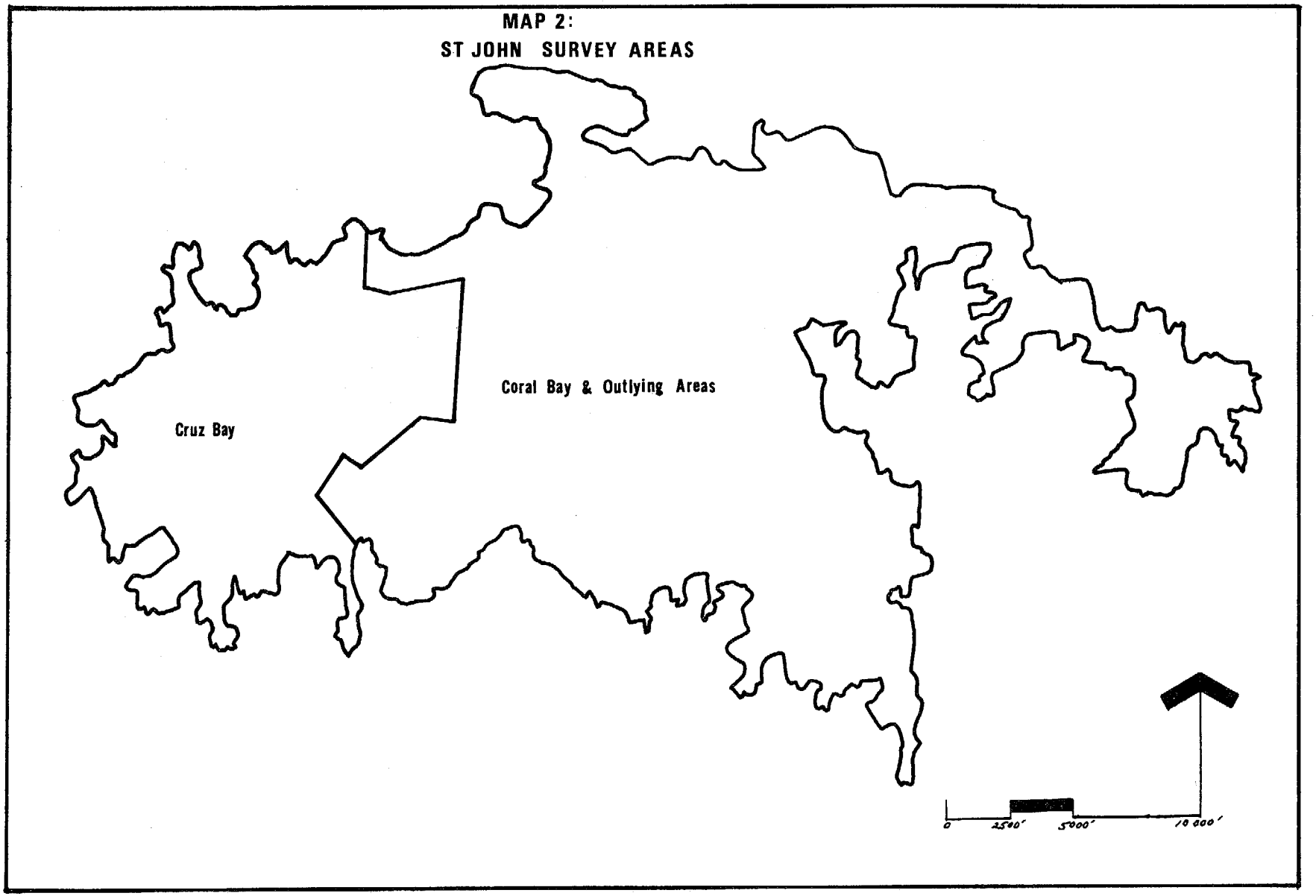
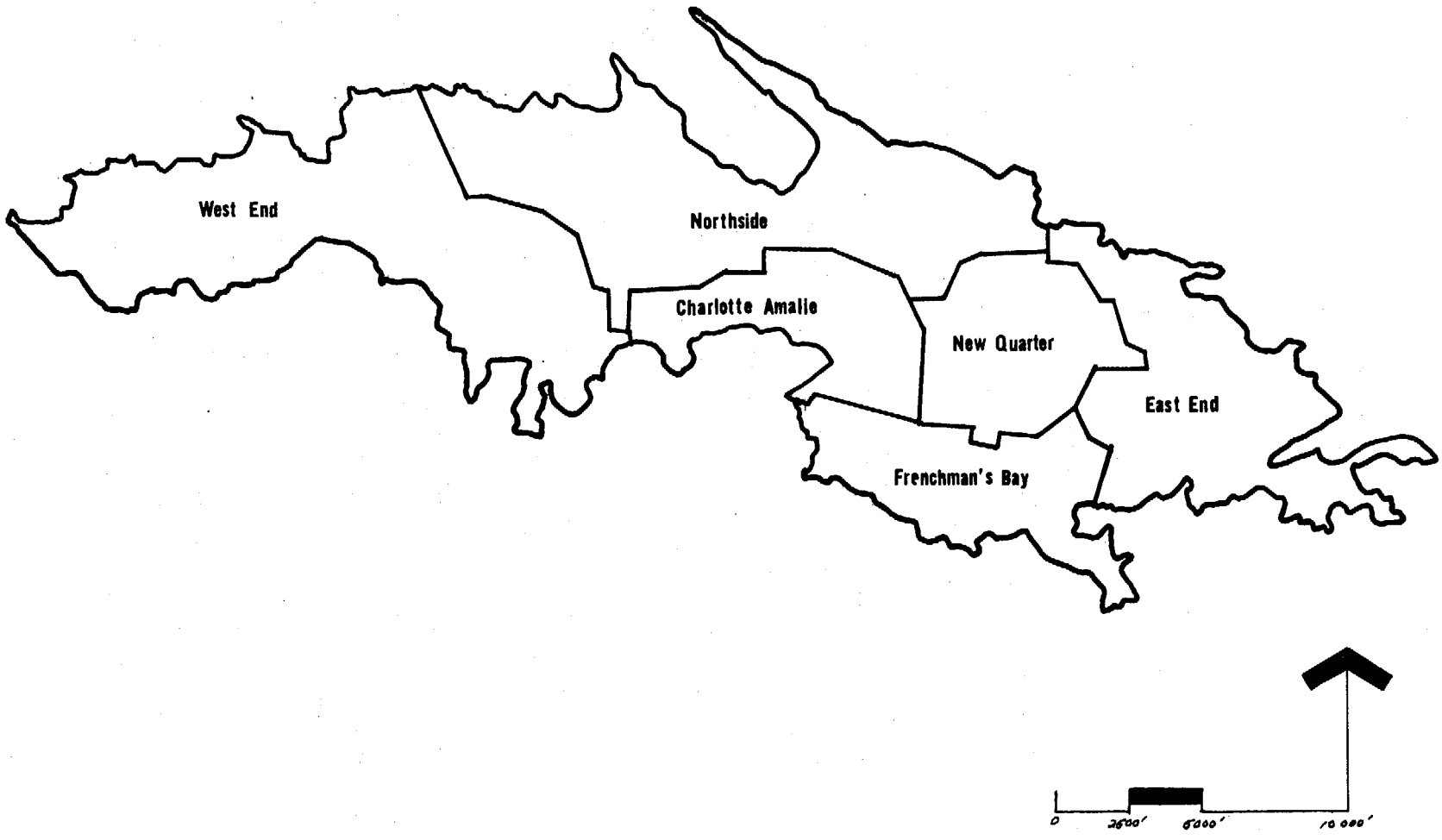
[1]Wilbur Smith and Associates in association with Design Collaborative, Virgin Islands Mass Transit Study: Final Draft Report, (February 1976)

MAP 1:
ST. CROIX SURVEY AREAS




MAP 2:
ST JOHN SURVEY AREAS
Coral Bay & Outlying Areas
Cruz Bay
0
2500'
5000'
10,000'

MAP 3:
ST. THOMAS SURVEY AREAS



there are not very many people living in large apartment complexes in the Virgin Islands, there are a lot of people living in public housing. To avoid under-representing this group, the sample was to be supplemented by interviews with sixty project residents on both St. Croix and St. Thomas.

INTERVIEW PROCEDURES

Fourteen interviewers, seven men, seven women, were employed. Teams of seven under a supervisor were formed for each of the main islands, with the St. Thomas team covering St. John.

Most interviewers had had previous survey experience either with an earlier housing survey conducted by the Planning Office or with research at the College of the Virgin Islands. After a three hour meeting to review survey objectives and procedures and to discuss means of soliciting responses and avoiding bias in the presentation of questions, interviewers were sent to do a pre-test.

The pre-test served not only to season the interviewers, but to identify problems with the interview schedule and procedures. As a result, several questions were rephrased. Several others were dropped to shorten interview time to about 40 minutes. It was also found that interviewers experienced difficulty locating many of the houses which were to be surveyed. This was due in large measure to inaccuracies in the tax data, but also in part to the fact that street addresses, where present, follow no logical sequence. Accordingly, in a subsequent meeting interviewers were instructed that when the target house did not exist as mapped, to take the house nearest to that location. Due to time constraints, a policy to eliminate calls back was also established. If the target house were located, but unoccupied (or if the occupant declined to be interviewed), interviewers were told to try the nearest house (s) until they had success. A third household identification procedure emerged when it became apparent that some of the targeted properties were businesses (which could not be detected from tax books). Interviewers were again instructed to go to the nearest residential unit. Interviewers were cautioned in all instances of substitution to avoid biasing the sample in favor of any class of unit or occupant. Interviews could be conducted with any occupant eighteen years or older.

The survey began in mid-July and ran through August 1976.

DATA ANALYSIS

Due to changes in the interview schedule, pre-test results were not integrated with those of the survey. Responses to all but three questions were pre-coded. Coding categories for question 18 (occupation) were derived from U.S. Census categories as listed in the Statistical Package for the Social Sciences Manual.[2] Responses to question 16 (reason for shoreline protection) were examined and tabulated to generate coding categories. Responses to question 25 (respondents' comments) were examined and tabulated, but they were not suitable for statistical analysis and hence were not formally coded. Coding was the responsibility of the survey supervisors. Since the Virgin Islands Mass Transit Study does not contain data on population composition, and in the absence of a more reliable source, Virgin Islands Census data (1950 - 1970) were employed as the only available check for the representativeness of the survey sample.

The Statistical Package for the Social Sciences (Version H, release 6.2) was used to analyze survey responses. Cross-tabulations between non-photo questions and all demographic variables were run by island. Chi Square was used to test the significance of associations between demographic variables and responses. Response tabulations and cross-tabulations for St. John were examined (and have been included in all tables), but due to the small sample size, were not tested for significance. For the same reason responses by island sub-areas were inspected, but not subjected to statistical analysis.

Computer work was performed at the Virgin Islands Department of Finance computer center.

PROBLEMS ENCOUNTERED

There were several problems related to survey design and implementation. Time constraints and difficulties with off-island photo processing required construction of photo panels from a somewhat limited array of photographs.

Several photographs of rocky beaches and low or steep relief rocky shores might be considered "hybrid" rather than clear examples of a particular shoretype. Additionally, developed shoretypes were underrepresented on St. Croix.

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[2]Nie, N., D.H. Bent, and C.H. Hull, Statistical Package for the Social Sciences, McGraw-Hill Company, (1970)

A more fundamental constraint was posed by the dearth of a satisfactory data base for sampling. Since many residents lack telephones, postal boxes or street addresses, no comprehensive list of households was available. Tax rolls provided the most complete, if not entirely up to date, listing of improved properties. The tax maps used to locate targeted households required interviewers to do a fair amount of substitution.

The need to substitute households was compounded by the fact that half of the interviewers were women who only worked weekdays when many people, particularly men, are not at home. This was a particular problem on St. Croix and undoubtedly accounted for the disproportionate number of women interviewed.

Lastly, free responses to question 16 (reasons for shoreline protection) were probably influenced by previous questions. Moreover, questions 16 and 22 (occupation) generated a wide array of responses. Since guidelines on the grouping of these responses into coding categories were not always clear, some coding inconsistencies exist.

Newspaper Survey

SURVEY FORMAT AND PROCEDURES

The full page (15" x 11¼") layout which was used contained: 1) the questionnaire; 2) a brief explanation; 3) a letter of endorsement from the Governor and 4) several photographs of different shoreline areas. A news article discussing the purpose of the survey and more generally Coastal Zone Management was also run on a different page in the same paper (Appendix B). By removing most explanatory material from the survey page and adding photographs, it was hoped that the layout would be distinctive and have visual appeal. The Governor's message was intended to encourage response. As an additional incentive to respond, the questionnaire was designed to be folded, stapled and mailed free of charge (business reply permit).

Most of the sixteen questions called for forced-choice responses. However, the opportunity for an "other" response was always available. Moreover, question structure was designed to both introduce respondents to terminology which is integral to the program and to encourage them to think more comprehensively about shoreline areas, and uses. The questionnaire and the accompanying article were run May 22, 1976 in all four of the Territory's newspapers.

DATA ANALYSIS

A relatively small return rate made hand tabulation and visual inspection feasible. No statistical analyses other than tabulation of frequencies and percentages were undertaken.

PROBLEMS ENCOUNTERED

As anticipated, the survey return rate was rather small. It might have been boosted if the questionnaire had run for several days. This was not done due to the high cost of running a full page advertisement, but in retrospect, it probably should have been. More publicity might also have helped. Arrangements for notices to the broadcast media were made, but did not work out very well.

However, the survey's real value was expected to be informational and educational rather than as a means of soliciting public input. While its success in this regard is impossible to assess, to the extent that more people read the survey than responded, it undoubtedly had wider impact in stimulating thinking about Coastal Zone Management.

3

SURVEY RESULTS

This chapter reports the results of both surveys. The household survey is presented first, and in greatest detail. After a discussion of the sample questions, responses are considered. Particular attention is given to those issues involving both greatest and least public consensus . Significant attitudinal/value deviation between sample sub-groups (geographic or demographic) are presented.

Discussion of the newspaper survey follows and focuses on the extent that findings support or amplify interview responses.

Household Survey

HOUSEHOLD SURVEY SAMPLE

Conducting the household survey proved to be somewhat more time consuming than anticipated. Consequently, only 743 of the targeted 795 interviews were completed. However, interview distribution was approximately as intended: 348 on St. Croix; 339 on St. Thomas; and 56 on St. John.

The social composition of the Virgin Islands' population has undoubtedly undergone great change on the past 20 years. However, data regarding current population composition are not very accurate, due to serious undercounting of certain sub-groups by the 1970 census and to the complex migrational patterns which have occurred since that census. Accordingly, it has been very difficult to assess the survey sample's representativeness of major sub-groups.

Nevertheless, the sample has been analyzed in terms of respondents' sex and age, length of residency in the Territory, and education and occupation, and is described in Tables 1-6 both by island and in terms of Territory-wide totals. When available, comparative data from the 1970 census have also been included, although reservations regarding its reliability must be kept in mind.

Irrespective of reservations about census data, the sample is clearly skewed with respect to sex (Table 1). Overrepresentation of females undoubtably resulted from interviewing during the day, when housewives comprise a very large share of the household population. Distortion is greatest on St. Croix where interviewing was almost exclusively daytime. However, females were not

found to differ significantly from other sub-groups in their perceptions of most coastal issues. Where significant differences by sex or any other demographic or geographic variables are suggested by the data, they are noted in the text.

TABLE 1

SAMPLE COMPOSITION BY SEX

Sex	St. Croix N=348	St. John N=53	St. Thomas N=309	Territory N=711
Male	32.2% (50.3)	41.5% (42.5)	43.4% (48.8)	37.8% (49.8)
Female	67.8 (49.7)	58.5 (57.5)	56.6 (51.2)	62.2 (50.2)

NOTE: 1970 Virgin Islands Census data enclosed in parenthesis.

To a lesser extent, the sample also appears to be skewed with respect to age when compared with the age breakdown of the 1970 census population (Table 2). Discrepancies may well be attributable to flaws in the census data. However, the survey may have been under-representative of 18-29 year olds and slightly over-representative of three older age categories. This could be explained by the fact that daytime interviews failed to catch the younger, working population at home. It may also be attributable to shifts in population distribution induced by immigration of older continentals and emmigration of younger, less-established natives and aliens. Regardless of the cause, differences with respect to age do not appear to be significant.

TABLE 2

SAMPLE COMPOSITION BY AGE

Age	St. Croix N=347	St. John N=54	St. Thomas N=320	Territory N=720
18-29 Yrs.	20.2% (39.5)	18.5% (43.6)	31.3% (38.3)	24.9% (39.1)
30-39 Yrs.	25.6 (24.4)	31.5 (18.7)	33.7 (24.4)	29.7 (24.2)
40-59 Yrs.	37.5 (26.1)	35.2 (26.7)	31.9 (26.8)	34.9 (26.9)
60 + Yrs.	16.7 (10.0)	14.8 (11.0)	3.1 (9.5)	10.6 (9.8)

NOTE: 1970 V.I. Census data is enclosed in parentheses for comparison. Percentages have been calculated using 18 and over population only.

Although no precise data exist on how much of recent population growth is attributable to immigration, it is generally assumed to be considerable. However, the survey, if anything, appears to be biased in favor of natives and long term residents (20 years or longer). In absolute numbers, assuming no deaths or emmigration, the total number of people living in the Territory twenty years ago could at most comprise only 31% of today's population (Table 3). Disproportionate sampling of long-term residents may be attributable to interviewers unconsciously selecting fellow Virgin Islanders in making household substitutions.

TABLE 3

SAMPLE COMPOSITION BY LENGTH OF RESIDENCY

Yrs. Here	St. Croix N=340	St. John N=25	St. Thomas N=290	Territory N=663
0-5 Yrs.	14.7%	12.0%	9.7%	12.4%
6-10	18.8	28.0	12.8	16.4
11-15	9.7	20.0	13.1	11.6
16-20	11.8	20.0	12.1	12.2
20+	45.0	20.0	52.3	47.4(31.2)

NOTE: Parenthesis indicates maximum possible percentage of long term residents as calculated from interpolated 1950-1960 census data.

If census data are used as a gauge, and a constant ratio between population sub-groups is assumed, about 3/4 of those respondents who are long-term residents are probably native Virgin Islanders. For this reason, the responses of long-term residents are considered to provide a rough indication of Virgin Islanders' views. Some indication of the sentiments of the continental and alien communities could also be obtained if responses were cross-tabulated with education and occupation (see Appendix C). In few instances, however, has length of residency in the Territory been found to be strongly related to variability in attitudes towards coastal issues.

Of the demographic variables analyzed, education was found to be most highly associated with variations in response (see Appendix C). If the census is used as a gauge, the survey sample appears to be over-representative of those with advanced schooling (Table 4). While this could reflect a greater

willingness to participate in the survey on the part of more educated persons, given the apparently proportional participation of those with least education, it may also reflect a real shift in the level of educational attainment.

TABLE 4

SAMPLE COMPOSITION BY EDUCATION

Education	St. Croix N=348		St. John N=54		St. Thomas N=316		Territory N=718	
Grade Sch.	27.9%	(28.5)	33.3%	(38.7)	24.7%	(28.5)	26.7%	(26.8)
High Sch.	'8.5	(54.7)	44.4	(44.6)	43.4	(54.7)	41.1	(55.6)
Advanced	'.6	(16.8)	22.3	(16.7)	32.0	(16.8)	32.2	(17.6)

NOTE: 1970 Virgin Islands Census data in parenthesis.

As Table 5 shows, the survey sample also appears to be rather irregular with regard to particular occupational categories on individual islands, but fairly representative of occupational distribution Territory-wide. Discrepancies may be attributed to the failings of census data, differences in the classification of jobs into coding categories, and/or actual occupational shifts, specially the widely acknowledged rise in government employment and a decline in construction related industries since the 1970 census was conducted. Regardless of what the occupational profile of the population actually is, occupation was not found to be highly associated with variability in response.

TABLE 5

SAMPLE COMPOSITION BY OCCUPATION

Occupation	St. Croix N=348		St. John N=52		St. Thomas N=304		Territory N=704	
White Collar	23.9%	(20.0)	21.2%	(19.9)	35.9%	(26.6)	28.8%	(22.9)
Blue Collar	9.8	(25.6)	11.5	(27.8)	11.8	(20.3)	10.9	(23.3)
Services	9.8	(14.8)	34.6	(25.0)	24.0	(18.8)	17.7	(17.0)
Housewife	38.2	(23.5)	21.2	(11.7)	17.1	(18.2)	27.9	(20.8)
Retired	12.6	(3.6)	5.8	(3.9)	1.3	(2.8)	7.2	(3.2)
Student	2.0	(4.9)	1.9	(4.8)	2.3	(6.3)	2.1	(5.5)
Unemployed	0.0	(3.4)	1.9	(3.9)	3.3	(2.7)	1.6	(3.1)
None	3.7	(4.2)	1.9	(3.0)	4.3	(4.3)	3.8	(4.2)

NOTE: 1970 Virgin Islands Census data in parenthesis.

Analysis of survey responses revealed that some differences in values and attitudes do exist between population sub-groups. While education appears to be the most important of the demographic variables, geography also plays an important role (with noteworthy differences on some issues among islands and sub-island units). Survey respondents were fairly much in accord, however, in one regard, and perhaps ultimately the most significant one: the Territory is home. When asked whether they intended to stay in the Territory, an overwhelming majority affirmed (Table 6).

TABLE 6

SAMPLE COMPOSITION BY INTENT TO STAY IN THE V.I.

Staying	St. Croix N=347	St. John N=55	St. Thomas N=319	Territory N=722
Yes	80.4%	87.3%	79.3%	80.2%
No	6.9	0.0	4.4	5.3
Unsure	12.7	12.7	16.3	14.5

HOUSEHOLD SURVEY RESPONSES

The survey was designed to elicit a better understanding of public perceptions and attitudes - specifically, those associated with shoreline areas. Accordingly, survey results are discussed in terms of public priorities concerning four categories of issues: 1) coastal problems 2) shoreline utilization 3) shoreline protection; and 4) the location of future development. Findings regarding each are presented so as to focus on the extent of public consensus. Where wide variability is evident, an attempt is made to trace differences to demographic or geographic variables. In the final chapter conclusions are drawn regarding the implications of survey findings for both coastal zone management and other public actions. The intent is to clarify for decision-makers both those issues and actions for which widespread public support is indicated, as well as those areas where the community is indifferent or divided.

COASTAL PROBLEMS

Respondents' perceptions of the Virgin Islands' most pressing coastal problems are indicated in Table 7. If all problems had been considered of equal importance, the percentage distribution in the table would approximate

60% each (see footnote). However, as shown, the extent of concern over coastal problems varied considerably. Water pollution seems to be an important issue to the most respondents, but particularly on St. Thomas. The removal of sand for construction and the loss of important natural areas are also of wide concern.

TABLE 7

PERCEPTIONS OF THE VIRGIN ISLANDS' THREE MOST IMPORTANT COASTAL PROBLEMS*

Problem	St. Croix** N=345	St. Thomas** N=325	St. John N=54	Territory N=724
Beach Access	55.7%	32.9%	60.0%	45.7%
Water Pollution	67.0	87.1	69.1	76.3
Flooding	7.5	31.8	25.5	19.9
Loss Natural Areas	67.9	45.1	72.2	57.8
Sand Removal	59.9	57.6	46.3	57.9
Decreasing Seafoods	41.0	36.2	20.4	37.1
				295.3%

* Question #18 - "What do you think are the three most important problems relating to the coast?" (Since respondents were allowed to emphasize up to three uses, the maximum total responses could equal 300%).

** Testing of response distribution for St. Croix and St. Thomas show response patterns to be significant (X^2=230.6; P≤ 0.01).

Most respondents consider water pollution an important coastal problem.

Beach access appears to be less of an issue than was anticipated, though it appears to be of more concern on St. Croix and St. John than on St. Thomas. Residents of Christiansted evinced greatest concern with 75% considering it an important problem.

Declining catches of seafoods and flooding are generally viewed as less important problems. However, flooding is viewed as a significant problem by long-term residents of St. Thomas and St. John, who have probably experienced it first hand. Understandably, greatest concern was expressed by residents of Charlotte Amalie (62.0%). On St. Croix, where fewer floods have occured it is not seen as a problem by long-term residents. In sum, perceptions of coastal problems are probably most strongly influenced by experience, either over time or in particular geographic areas. There is apparently very broad consensus about water pollution, and to a lesser extent regarding the damage which has been done to sand beaches and natural areas.

SHORELINE UTILIZATION

Overall Development Attitudes

A sense of the relative importance of economic, amenity and natural values is gained from respondents' attitudes toward coastal development.

As Table 8 indicates, when first, second and third responses are aggregated there is broadest support, throughout the Territory, for recreational use of the shoreline. Although support is stronger on St. Croix than on St. Thomas or St. John, the widespread importance of recreation is clear. On

TABLE 8

ATTITUDES TOWARD SHORELINE DEVELOPMENT:
USES TO BE EMPHASIZED*

Use	St. Croix** N=346	St. Thomas** N=333	St. John N=55	Territory N=734
Industry	45.5%	51.4%	34.5%	47.3%
Commerce	49.6	55.3	61.8	53.1
Residential	56.8	71.8	83.6	65.5
Recreation	82.4	64.6	67.3	73.1
Conservation	65.7	51.1	49.1	57.8
				296.8%

* Question #9 - "If you were deciding how coastal areas should be used, which of the following uses would you emphasize first? second? third?" (Since respondents could emphasize up to three uses, the maximum total response could equal 300%; distribution of response would approximate 60% each if all uses were perceived to be of equal importance).

** Response patterns are significant ($X^2=68.6$; $P\leq 0.01$).

the other hand support for industrial use of the shoreline is least widespread. Attitudes toward commercial, residential and conservation uses are more variable.

The relative strength of people's attitudes is more clearly indicated by the type of shoreline development they would emphasize first. Table 9 includes only first responses and shows that recreation is not necessarily people's primary concern. Rankings were found to be significantly associated with differing levels of education (and presumably income). See Table 48 Appendix C). Recreation tends to be a major concern for the more educated. Attitudes, however are also associated with island of residency. St. Croix respondents were not any more educated, but did perceive shoreline recreation to be more important.

TABLE 9

SHORELINE USE TO EMPHASIZE FIRST*

Use	St. Croix** N=346	St. Thomas** N=333	St. John N=55	Territory N=734
Industry	21.6%	23.4%	7.3%	21.4%
Commerce	12.1	16.5	29.1	15.4
Residential	12.4	17.1	25.5	15.7
Recreation	33.5	15.3	14.5	23.9
Conservation	20.5	27.6	23.6	23.9
				100.3%

* Question #9 - First choice responses only (since respondents could have only one first choice, responses should total 100%. However, occasionally two first choices were recorded, hence totals do not exactly equal 100%; response distribution would approximate 20% each if all uses were favored equally).

** Response patterns are significant (X^2=71.3; P≤0.01).

The converse of recreation is true of industry. While support for industrial development is not widespread there is a considerable segment of the population to whom it is of primary concern. While this tends to be a less educated group, island of residency is also significant. Support for industry is weakest on St. John. Respondents from St. John, however, are more concerned about commercial and residential development than those from St. Croix or St. Thomas where shopping and housing opportunities are more extensive.

Conservation was the only use which was of primary concern to a large number of respondents Territory-wide, although it is of most concern to the more educated.

In sum, the population appears to agree on the importance of recreation if not on its primacy. Otherwise people are divided regarding future shoreline development: the more educated (and probably more affluent) favor conservation; those that are less so seem to favor industrial development. It bears emphasis that long-term residents, who are probably primarily native Virgin Islanders, appear to fall in both camps and do not have attitudes which differ significantly from newcomers . In the future, as educational levels continue to rise, consensus regarding the importance of recreation and conservation may increase somewhat, and support for industrial, commercial, or residential development over recreation and conservation may decline.

Economic Development Attitudes

When first, second and third choices regarding modes of economic development are aggregated, widest support is indicated throughout the Territory for agriculture; heavy manufacturing receives least support (Table 10). Perceptions of the importance of other economic development options vary among the islands, but not greatly among demographic sub-groups. After agriculture, light industry was favored on St. Thomas and St. Croix. St. John respondents favored the expansion of tourism and fishing.

TABLE 10

ATTITUDES TOWARDS ECONOMIC DEVELOPMENT:
THE THREE MOST FAVORED INDUSTRIES*

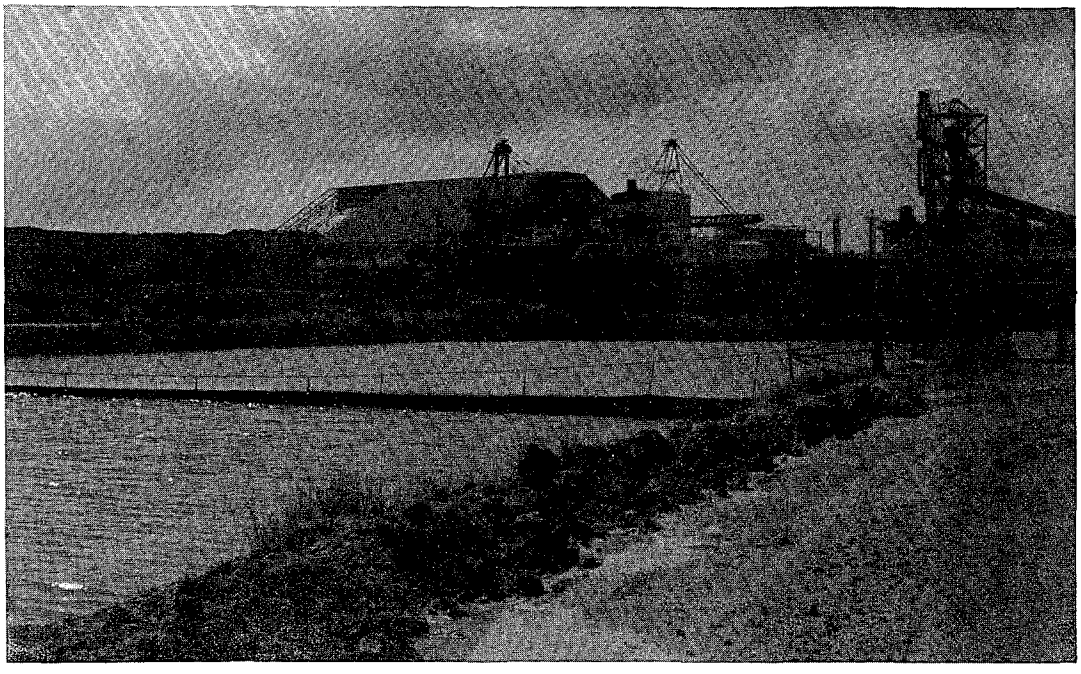
Industry	St. Croix** N=348	St. Thomas** N=333	St. John N=54	Territory N=735
Heavy Manufacturing	35.9%	22.8%	14.8%	28.3%
Light Industry	67.4	63.5	44.4	63.9
Agriculture	87.1	87.7	81.5	86.9
Tourism	52.6	59.8	75.9	57.8
Fishing	56.2	59.8	68.5	58.7
				295.6%

* Question #10 - "If economic growth does occur, and you could choose, which three of the following types would you favor first? second? third?" (Since respondents were asked to select three uses, the maximum total response could equal 300%, response distribution would approximate 60% each if all were perceived equally).

** Response patterns are significant ($X^2 \approx 206.4$; $P \leq 0.01$).

Based on first choices only, Table 11 indicates that while agricultural development has general support Territory-wide, economic development priorities

Expansion of agriculture has strong support through-out the Territory.



Support for further heavy industrial development is not widespread, but is of great concern to some residents.

otherwise differ considerably among the islands. Support for agriculture is very strong on St. Thomas with substantial though much smaller segments of the community advocating light industry and tourism. On St. Croix agriculture and light industry both have strong support, while heavy manufacturing has a smaller, but notable constituency. Respondants from St. John favored tourism, fishing and agriculture in approximately equal numbers.

TABLE 11

THE MOST FAVORED INDUSTRY*

Industry	St. Croix** N=348	St. Thomas** N=333	St. John N=54	Territory N=735
Heavy Manufacturing	16.1%	9.3%	3.7%	12.1%
Light Industry	33.3	21.3	14.8	26.6
Agriculture	31.3	41.6	24.1	35.4
Tourism	12.4	17.4	29.6	16.1
Fishing	6.9	9.6	27.8	9.7
				99.9%

* Question #10 - First choice responses only (responses should total 100%, but some respondents did not distinguish first from second and third choices, hence totals do not always equal 100%; response distribution would approximate 20% if all industries were viewed equally).

** Response pattern is significant (X^2=213.7; P≤0.01).

Although attitudes towards economic development vary among the islands, within each there is apparently more consensus regarding economic development than about shoreline development over all. The pattern of responses in Tables 10 and 11 are quite consistent (in contrast to Tables 8 and 9), indicating that there would seem to be less of a problem with large educational subgroups having different attitudes from island residents as a whole.

Preference for heavy manufacturing was the only response found to be significantly associated with educational characteristics (see Table 49, Appendix C). Given that preference for heavy manufacturing was notable only on St. Croix, it is possible that positive experience with manufacturing and the feasibility of expansion on that island were more important factors than educational level. Thus, the apparent dilemma raised by educational subgroups favoring conflicting industrial development and conservation goals is somewhat mitigated. While respondents may differ on the importance of economic development, there is considerable agreement by island as to the modes preferred.

Tourism Development Attitudes

With the exception of St. John, further tourist development was not strongly preferred, however, the subject was probed in detail since tourism is, and is likely to continue to be, a dominant element in the Virgin Islands' economy. Moreover, tourist-related development exerts great pressure on coastal zone resources.

Tables 12 and 13 indicate that if tourism is to continue growing, cruise ships and hotels are viewed as the most important modes to emphasize Territory-wide. While support for cruise ship development seems to be somewhat more widespread, when it come to which type of development is preferred, as indicated by first choice responses, the greatest number of people favored hotel and guest house development. On St. John there is considerably more

TABLE 12

ATTITUDES TOWARD TOURISM:
THE THREE MOST FAVORED MODES*

Mode	St. Croix** N=345	St. Thomas** N=325	St. John N=54	Territory N=724
Condominium/2nd home	50.0%	41.1%	38.9%	45.2%
Hotel/guest house	72.0	80.4	75.9	76.0
Cruise ship	85.8	85.9	72.2	84.8
Boating	47.7	51.8	70.4	51.4
Camping	43.9	36.2	37.0	39.9
				297.3%

* Question #11 - "If growth in tourism does occur, and you could choose, which type of tourism would you favor first? second? third?" (Since respondents were allowed to emphasize up to three uses, maximum total response could equal 300%; response distribution would approximate 60% if all types were favored equally).

** Response pattern is significant (X^2=190.6; P≤0.01).

TABLE 13

THE MOST FAVORED MODE OF TOURISM*

Mode	St. Croix** N=346	St. Thomas** N=326	St. John N=54	Territory N=724
Condominium/2nd home	24.0%	12.9%	13.0%	18.2%
Hotel/guest house	33.2	39.9	29.6	35.9
Cruise ship	24.3	33.4	24.1	28.3
Boating	5.5	6.7	29.6	7.9
Camping	13.0	6.7	3.7	9.5
				99.8%

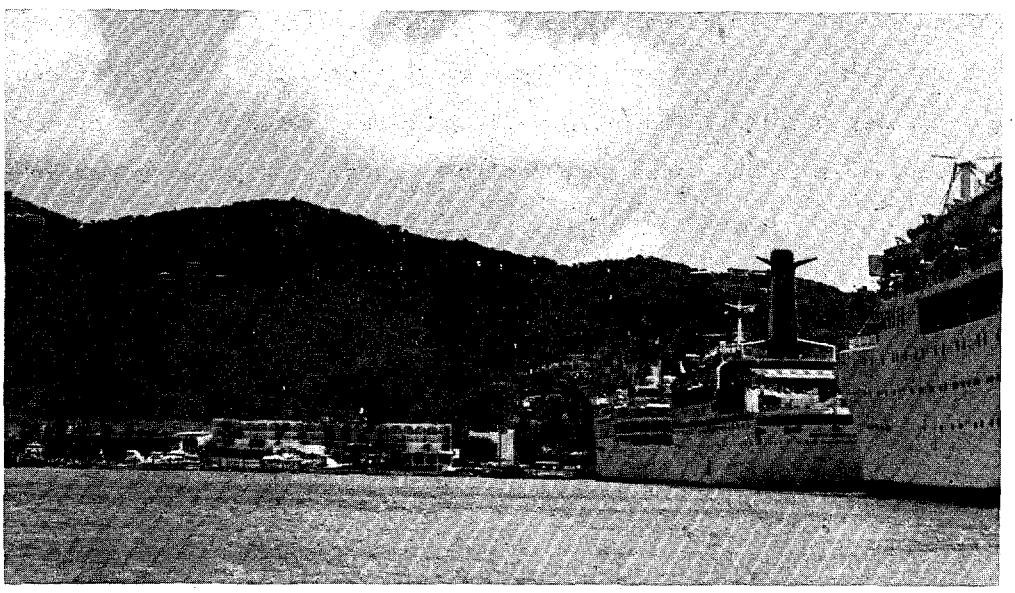
* Question #11 - First choice responses only (responses should total 100%, but not all respondents distinguished first choices, hence totals do not always equal 100%).

** Response pattern is significant (X^2=258.9; P≤0.01).

support for developing the boating industry; indeed, a large segment of the community feels it should be emphasized first. This is particularly important since respondents on St. John seem to have more interest in tourist development than those on St. Thomas or St. Croix.

Support for condominium and second home development is not particularly widespread, but it is the favored mode of tourism among a considerable number of those interviewed on St. Croix. This type of development tends to be preferred by shorter-term residents (fifteen years or less) and particularly those who are not sure they will stay in the Territory.

In sum, with the exception of this sub-group on St. Croix, there appears to be strong consensus among residents as to their priorities if tourist development is to continue: hotels, guest houses and cruise ships Territory-wide, plus additional boating on St. John.



Hotel, guest house, and cruise trade are the most widely preferred modes of tourism.

Recreational Development Attitudes

Coastal recreation was an important, if not the primary concern, of nearly three-quarters of all interviewees. Table 14 indicates that when first, second, and third choices are aggregated, there appears to be wide consensus regarding the desirability of creating waterfront parks. There is less support for both underwater parks and public boating facilities. Support for other types of coastal recreation varies somewhat among the islands.

TABLE 14

ATTITUDES TOWARDS COASTAL RECREATIONAL DEVELOPMENT:
THE THREE MOST FAVORED TYPES*

Type	St. Croix** N=346	St. Thomas** N=329	St. John N=53	Territory N=728
Beach Access	67.5%	55.0%	41.5%	60.0%
Beach Facilities	59.8	58.7	62.3	59.3
Boating Facilities	27.3	31.9	47.2	30.8
Fishing Piers	43.7	51.1	50.9	47.5
Underwater Parks	28.2	32.5	22.6	29.8
Waterfront Parks	71.6	64.1	71.7	68.3
				295.7%

* Question #13 - "If more opportunities for recreation and relaxation were being provided, which of the following would you favor first? second? third?" (Since respondents were allowed to metion up to three uses, maximum total response could equal 300%; response distribution would approximate 50% if all choices were viewed equally).

** Response pattern is significant (X^2=195.6; P≤0.01).

Table 15, however, indicates that beach access is the primary recreational concern of the greatest number of people, particularly on St. Croix and specifically in Christiansted where beach access was also considered a major coastal problem. The primacy given to beach access may be in some part attributable to the widespread publicity this issue has received in recent years.

TABLE 15

THE MOST FAVORED TYPE OF RECREATIONAL OPPORTUNITY*

Type	St. Croix** N=346	St. Thomas** N=329	St. John N=53	Territory N=728
Beach Access	47.1%	36.8%	35.5%	40.6%
Beach Facilities	17.8	20.7	5.1	17.6
Boating Facilities	3.2	2.2	6.8	2.3
Fishing Piers	11.5	18.9	15.3	14.8
Underwater Parks	6.0	8.7	5.1	6.7
Waterfront Parks	14.4	12.7	32.2	14.9
				96.9%

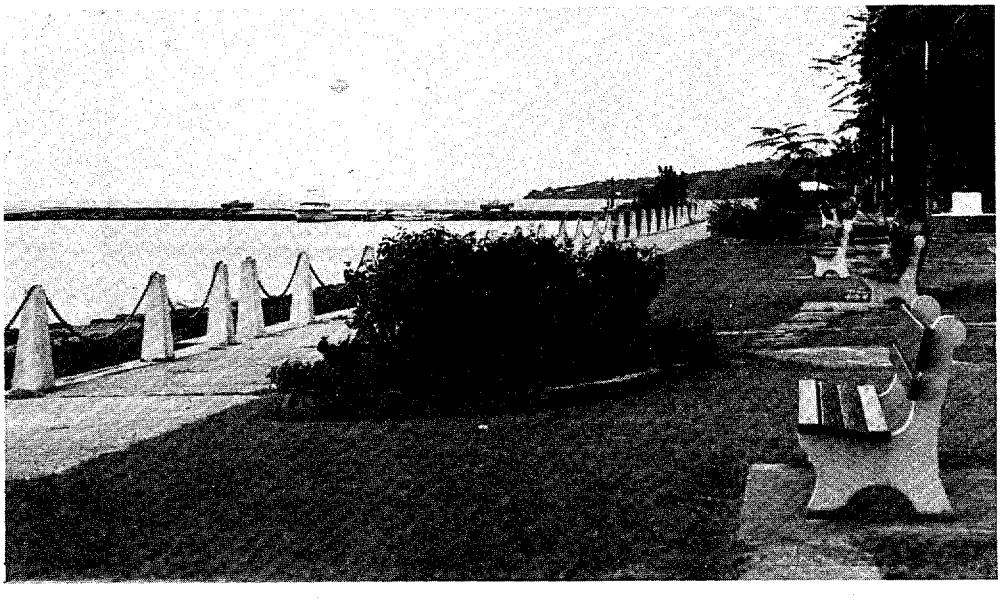
* Question #13 - First choice responses only (response should total 100% except not all respondents distinguished first choice; response distribution would approximate 16% if all choices were viewed equally).

** Response pattern is significant (X^2=247.6: P≤0.01).

Relatively small though notable numbers of respondents were more interested in emphasizing beach facilities, waterfront parks or fishing piers first. Preferences tended to be associated with geographic rather than demographic variables (see Table 43 Appendix C). Beach facilities were the first choice

of quite a few respondents on St. Thomas and St. Croix, but few on St. John , where there is a considerable constituency for waterfront parks. About one in seven respondents throughout the Territory would give first priority to the development of fishing piers.

Some respondents also expressed interest in developing beach facilities .....and waterfront parks.



In sum, there is broad support for the improvement of beach access; residents of all three islands perceive it to be the Territory's primary coastal recreation concern. This might seem at odds with the relatively

lesser importance assigned to beach access as a perceived coastal problem. Only respondents from St. John perceive beach access to be one of the Virgin Islands' three most important coastal problems. However, this appear less contradictory when it is remembered that while most people considered recreation an important shoreline use, fewer gave it primary emphasis.

As for what the primary emphasis of coastal development should be, however, the public appears divided. As much support was expressed for emphasizing conservation or industrial development as for recreation. This dilemma regarding shoreline utilization is somewhat abated by the fact that there is a great deal of consensus regarding economic development. It is perhaps fortunate that agriculture and light industry are most widely supported. Neither is dependant on a coastal site, and can be accommodated inland, thereby freeing coastal areas for both recreation and conservation plus water dependent commercial activities.

SHORELINE PROTECTION

Apparent public concern about such problems as water pollution, the loss of natural areas and the destruction of beaches, as well as mixed feeling regarding future development is further illuminated by respondent's attitudes toward shoreline protection.

The Need for Shoreline Protection

As Table 16 indicates over 70% of all interviewees responded in the affirmative when asked if there were any shoreline areas in need of protection from overdevelopment. While a considerable number had no opinion very few were opposed to the idea.

TABLE 16

ATTITUDES TOWARD SHORELINE PROTECTION FROM OVER DEVELOPEMENT

	St. Croix** N=346	St. Thomas** N=288	St. John N=55	Territory N=689
Yes	67.0%	72.6%	89.1%	71.0%
No	8.0	8.0	3.6	7.7
No opinion	25.0	19.4	7.3	21.3
				100.0%

* Question #14 - "Are there any shorelines which should be protected from over development?"

** Response pattern is significant ($X^2=397.2$; $P \leq 0.01$).

Moreover, on St. John where shorelines are largely protected by the National Park Service and where it is reported that residents feel "over-protected" the strongest support was exhibited. Their experience may have convinced most residents that regulation of development can be beneficial.

Response to the concept of shoreline protection is linked with both education and occupation. Support was strongest amongst the more educated, and particularly white collar workers, however, opposition was not found to be great among any occupational groups. Respondents with least education were much more likely to have no opinion than to be opposed.

Rationale for Protection

Most respondents selected examples, from the set of photographs of areas where protection might be called for, and explained why. A wide variety of reasons were cited, including statements about the area's natural or amenity values; concerns about possible negative impacts; and often simply, that they "like it the way it is."

Responses were grouped as shown in Table 17. However, since there seems to have been some coding discrepancies between islands regarding the treatment of statements falling into the last two categories, and since many statements could have been placed in two or more categories, percentages should be interpreted loosely.

TABLE 17

RATIONALE FOR SHORELINE PROTECTION*

Reason	St. Croix** N=228	St. Thomas** N=157	St. John N=17	Territory N=402
Ecological value	30.6%	10.1%	26.4%	21.2%
Recreational value	27.1	3.8	5.2	16.0
Scenic Value	35.2	49.7	36.9	41.5
Prevent Pollution	7.1	4.3	5.2	5.9
Like as is	0.0	23.1	21.1	11.1
Already too developed	0.0	9.1	5.2	4.3
				100.0%

* Question #16 - "Why do you feel these areas should be protected?" (Response distribution would approximate 17% if all viewed equally).

** Response pattern is significant (X^2=374.5; P≤0.01).

Respondents on St. Croix, who favored both recreation and conservation more than those on either St. Thomas or St. John, consistently place greater emphasis on recreational and ecological values than their counterparts. Demographic variables were not found to be significantly associated with reasons given.

As Table 17 indicates, respondents seem to perceive shoreline protection primarily in terms of the preservation of positive values: aesthetic, ecological or recreational, rather than the prevention of negative effects. Why this is so is unclear, but it may explain why pollution was rarely cited despite being considered the Virgin Islands' most important coastal problem.

Tourist Attractions

Residents' perceptions of what makes the Territory enjoyable to tourists provide additional information about the attributes of coastal areas which are most highly valued. As Table 18 indicates, when first, second and third ranked attractions were aggregated, weather, beaches, and to a lesser extent duty-free shops and scenery are the Territory's main tourist attractions. Neither hotels/restaurants nor friendly people are considered very important.

TABLE 18

PERCEPTIONS OF THE VIRGIN ISLANDS
THREE MAIN TOURIST ATTRACTIONS*

Attraction	St. Croix** N=348	St. Thomas** N=330	St. John N=54	Territory N=732
Duty-free shops	53.4%	68.2%	33.9%	58.6%
Scenery	42.9	57.3	80.4	56.8
Hotels/restaurants	8.0	7.3	8.9	7.8
Weather	79.5	67.0	76.8	73.6
Beaches	74.4	70.3	76.4	72.8
People	31.3	28.6	26.4	29.8
				299.4%

* Question #12 - "What are the Virgin Islands' main attractions to tourists? first? second? third?" (Since three selections were requested response could total at maximum 300%; response distribution would approximate 50% each if all choices were viewed equally).

** Response pattern is significant (X^2=473.1; P≤0.01).

Perceptions of the single greatest asset (Table 19) tend to discount beaches somewhat but emphasize scenery. They also vary considerably between islands, and reflect in large measure residents' understanding of the key assets of each island.

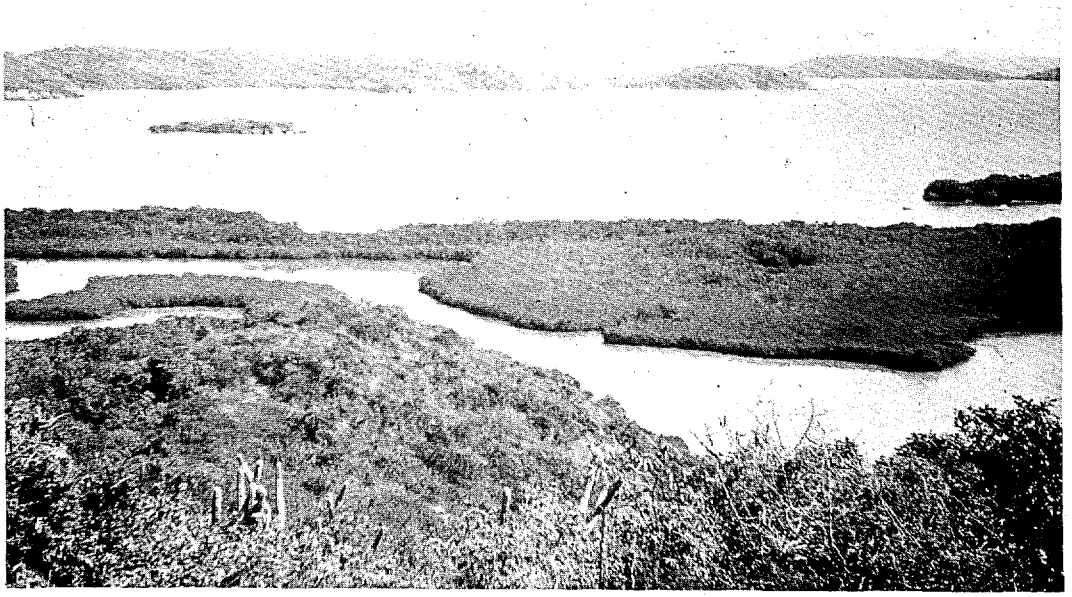
TABLE 19

THE VIRGIN ISLANDS' MAIN TOURIST ATTRACTION*

Attraction	St. Croix** N=348	St. Thomas** N=330	St. John N=54	Territory N=732
Duty-free shops	26.7%	35.2%	19.6%	29.9%
Scenery	12.1	26.1	35.7	20.2
Hotel/restaurants	1.4	0.3	0.0	0.8
Weather	41.4	18.8	23.2	29.8
Beaches	10.6	14.2	18.2	12.9
People	7.8	5.8	3.8	6.6
				100.2%

* Question #12 - First attraction only (response distribution would approximate 17% each if all attractions were viewed equally).

** Response pattern is significant (X^2=389.4; P≤0.01).



Enjoyed by both tourists and residents?

Scenic Quality

Since development is unlikely to affect the weather or the duty-free status of Virgin Islands' shops, scenic quality and beaches are the tourist attractions most likely to be threatened by over development. Scenic value, as noted above, was also the reason most often cited for shoreline protection.

To determine the degree of consensus regarding what is considered scenic, respondents were asked to evaluate the beauty of different types of shoreline areas as shown in photographs: first of their own island, then of the Territory as a whole. The data indicate a great deal of agreement regarding scenic assessments - not only about individual areas, but also more generally

about the different shoretypes. Tables 20 through 23 show how each photo set was ranked. Standard deviations from mean scores were not found to be large (1.75 or less), indicating that respondents did not vary greatly in their assessments of individual photos.

TABLE 20

ST. CROIX RESPONDENTS' PERCEPTIONS OF
ST. CROIX SHORELINE VISUAL QUALITY*

Photo**	Shoretype	$\bar{X}$	S.D.	Rank Order ($\bar{X}$)
1	Steep Rocky (Undev.)	3.05	0.81	10
2	Developed: Harbor	2.50	0.82	3
3 (10)	Rocky Beach (Undev.)	3.00	0.80	9
4	Developed: Industrial	3.43	0.77	13
5	Mangroves (Undev.)	2.80	0.75	6
6 (5)	Developed: Harbor	2.62	0.88	4
7	Low Relief (Undev.)	3.12	0.72	11
8 (12)	Dead Mangroves	4.47	0.79	15
9 (1)	Steep Rocky (Dev.)	3.17	0.69	12
10	Sand Beach (Undev.)	2.02	0.96	1
11	Steep Rocky (Undev.)	2.77	0.79	5
12 (9)	Sand Beach (Dev.)	2.44	0.76	2
13	Salt Pond (Undev.)	3.80	0.71	14
14 (2)	Low Relief (Undev.)	2.88	0.77	7
15	Low Relief (Undev.)	2.92	0.67	8

N=348

TABLE 21

ST. JOHN RESPONDENTS' PERCEPTIONS OF
ST. JOHN SHORELINE VISUAL QUALITY*

Photo**	Shoretype	$\bar{X}$	S.D.	Rank Order ($\bar{X}$)
1	Steep Rocky (Undev.)	2.91	0.67	7
2	Steep Rocky (Dev.)	3.46	0.63	13
3	Salt Pond (Dev.)	3.32	0.77	11
4	Mangroves (Dev.)	3.30	0.71	10
5	Sand Beach (Dev.)	2.32	0.69	3
6 (7)	Salt Pond (Undev.)	3.77	0.93	14
7	Mangroves (Undev.)	3.13	0.60	8
8	Rocky Beach (Undev.)	3.84	1.07	15
9 (15)	Salt Pond (Dev.)	3.27	0.80	9
10	Sand Beach (Undev.)	2.16	0.68	2
11	Steep Rocky (Undev.)	3.36	0.77	12
12	Developed: Harbor	2.73	0.62	5
13 (6)	Sand Beach (Undev.)	1.75	0.90	1
14	Developed: Harbor	2.88	0.43	6
15	Steep Rocky (Undev.)	2.32	0.61	3

N=56

* Questions #1-4 - "Looking at this panel" (Panel B, with examples from St. Croix) "which four shorelines are the most beautiful?" "Which is the most beautiful?" "Which four shorelines do you find least beautiful?" "The least beautiful?"

** Several photographs were repeated on Panel A (Territory-wide). Parenthesis identify those repeated by number on Panel A.

TABLE 22

ST. THOMAS RESPONDENTS' PERCEPTIONS OF
ST. THOMAS SHORELINE VISUAL QUALITY*

Photo**	Shoretype	$\bar{X}$	S.D.	Rank Order (X)
1	Developed: Harbor	2.80	0.67	5
2	Rocky Beach (Undev.)	3.43	1.05	13
3	Salt Pond (Undev.)	3.14	0.90	11
4	Sand Beach (Undev.)	2.18	0.86	2
5	Developed: Harbor	3.25	0.72	12
6	Sand Beach (Dev.)	2.13	0.92	1
7	Steep Rocky (Dev.)	2.94	0.69	7
8	Mangrove (Undev.)	2.70	0.75	4
9	Sand Beach (Dev.)	2.51	0.99	3
10	Developed: Harbor	3.07	0.73	10
11	Steep Rocky (Dev.)	2.81	0.63	6
12	Steep Rocky (Undev.)	3.03	0.64	9
13	Salt Pond (Undev.)	4.00	0.90	15
14	Developed: Harbor	3.54	0.80	14
15	Mangrove (dev.)	2.96	0.54	8

N=339

Panel A provided a check on whether respondents' perceptions of scenic quality would be influenced by familiarity with the areas depicted. This does not appear to have any bearing, however, since photos which were repeated on Panel A for reassessment by all respondents tended to be evaluated the same as when included on Panel B.

TABLE 23

TERRITORY-WIDE PERCEPTIONS OF TERRITORY
SHORELINE VISUAL QUALITY*

Photo**	Shoretype	$\bar{X}$	S.D.	Rank Order (X)
1 (X9)	Steep Rocky (Dev.)	3.10	0.60	10
2 (X14)	Steep Rocky (Undev.)	2.92	0.77	7
3 (T5)	Developed: Harbor	2.86	0.72	6
4 (T2)	Rocky Beach (Undev.)	3.32	0.85	12
5 (X6)	Developed: Harbor	2.74	0.77	5
6 (J13)	Sand Beach (Undev.)	1.85	0.87	1
7 (J6)	Salt Pond (Undev.)	3.21	0.76	11
8 (T13)	Salt Pond (Undev.)	3.51	0.73	14
9 (X12)	Sand Beach (Dev.)	2.45	0.74	3
10 (X3)	Rocky Beach (Undev.)	3.03	0.76	9
11 (T7)	Steep Rocky (Dev.)	2.73	0.70	4
12 (X8)	Dead Mangroves	4.17	0.93	15
13	Developed: Industrial	3.43	0.85	13
14	Mangroves (Undev.)	2.39	0.81	2
15 (J9)	Salt Pond (Dev.)	2.97	0.75	8

N=743

* Questions #5-8 - "Looking at this panel" (Panel A, with examples from all three islands) "Which four shorelines are the most beautiful?" "Which four shorelines do you find least beautiful?" "The least beautiful?"

** Thirteen of the fifteen photos were repeated from B panels (single island). Letter and number in parenthesis identify its source by island panel and photo number.

Perceptions of the relative quality of each shoretype are more clearly seen in Tables 24 and 25. The first compares the types of areas ranking highest and lowest on each panel. Sand beaches, undeveloped mangroves, harbors and steep rocky shores were the types nominated as most beautiful. Sand beaches were consistently ranked first. Those areas considered least beautiful included: rocky beaches, dead mangroves, salt ponds, harbors and steep rocky shores. With the exception of the last two categories -- harbors and steep rocky shores, which included low to high ranking examples -- reaction to the different shoretypes were reasonably consistent (Table 25). For most types, the range of assessments is relatively narrow; much of what variation exists is probably attributable to variations in the types and quality of the examples to be ranked in each photo set.

TABLE 24

PERCEPTIONS OF THE MOST AND LEAST SCENIC AREAS*

RANK		PANEL B			PANEL A
		St. Croix	St. John	St. Thomas	
Highest	1	Sand Beach (Undev.)	Sand Beach (Undev.)	Sand Beach (Dev.)	Sand Beach (Undev.)
	2	Sand Beach (Dev.)	Sand Beach (Undev.)	Sand Beach (Undev.)	Mangroves (Undev.)
	3	Developed: Harbor	Steep Rocky (Undev.)	Sand Beach (Dev.)	Sand Beach (Dev.)
	4	Developed: Harbor	Sand Beach (Dev.)	Mangrove (Undev.)	Steep Rocky (Dev.)
	12	Steep Rocky (Dev.)	Steep Rocky (Undev.)	Developed: Harbor	Rocky Beach (Undev.)
	13	Developed: Industrial	Steep Rocky (Dev.)	Rocky Beach (Undev.)	Developed: Industrial
	14	Salt Pond (Undev.)	Salt Pond (Undev.)	Developed Harbor	Salt Pond (Undev.)
Lowest	15	Dead Mangroves	Rocky Beach (Undev.)	Salt Pond (Undev.)	Dead Mangroves

* Question #1-8 - Considering the four photos ranking highest and the four photos ranking lowest on each panel.

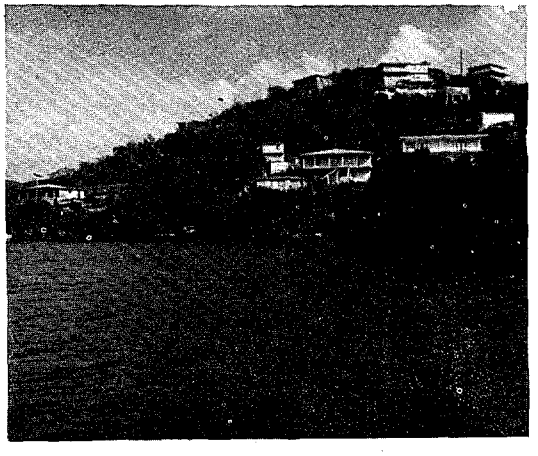
TABLE 25

PERCEPTIONS OF RELATIVE VISUAL QUALITY BY SHORETYPE*

SHORETYPE	NO. OF EXAMPLES	RANKINGS ASSIGNED TO SHORETYPE EXAMPLES BY PANEL			
		St. Croix	St. Thomas	St. John	A
Sand Beach (Undev.)	5	1	2	1/1, 2	
Sand Beach (Dev.)	5	2/3	1, 3	3	
Mangroves (Undev.)	4	6	4	8	2
Mangroves (Dev.)	2		8	10	
Low Relief (Undev.)	4	7 /7, 8, 11			
Salt Pond (Dev.)	3			9 /8, 11	
Rocky Beach	5	9 /9	13 /12	15	
Salt Pond (Dev.)	6	14	11, 15/4	14 /11	
Dev: Industrial	2	13			13
Dead Mangroves	2	15 /15			
Steep Rocky (Undev.)	5	5, 10	9	3, 12	
Steep Rocky (Dev.)	7	12 /10	6, 7 /4	7, 13	
Dev: Harbor	10	3, 4/5	5, 10, 12/6, 14	5, 6	

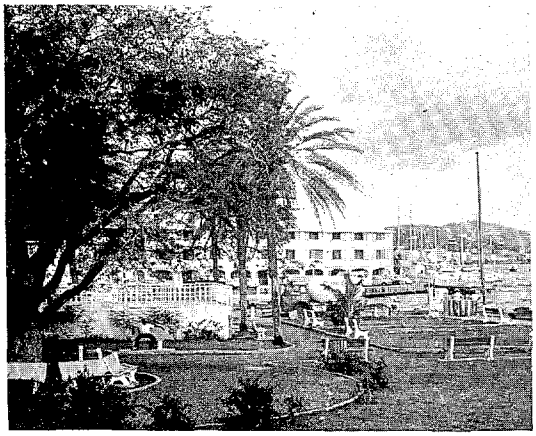
* Questions #1-8 Comparision of the mean rankings associated with shoretype examples on each photo set. Rankings of photos repeated on panel A are shown as a/b where a indicates the rank on invividual island panel and b indicates rank for the same photo on Panel A.

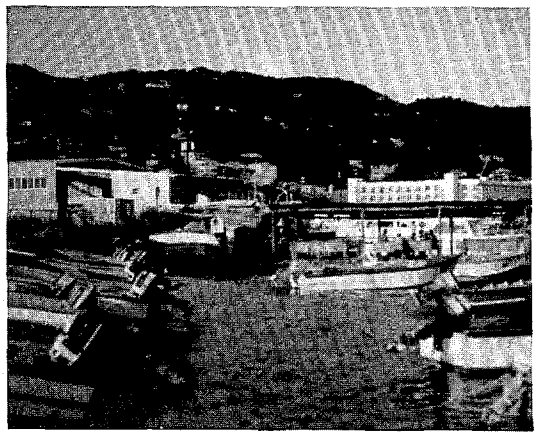
What can be said about shoretype aesthetics? As Table 25 indicates, sand beaches were consistently perceived to be of highest scenic quality. No clear distinction is apparent, however, between developed and undeveloped beaches. Perceptions of mangrove areas seem to be rather mixed, with natural, undeveloped areas ranking considerably higher than their developed counterparts. Low relief shorelines and developed salt ponds are considered to have moderate to moderately low visual quality. Rocky beaches ranged somewhat lower followed by undeveloped salt ponds. Dead mangrove and industrial areas consistently ranked the lowest.



Undeveloped mangrove stands are considered more beautiful than developed ones.

Perceptions of steep rocky shores, however, tend to be quite variable, ranging from moderately high to moderately low. Dramatic topography appeared to influence assessments positively; sharp jagged rocks at the waterline negatively . Perceptions of harbor areas were also variable, but tended towards the polar extremes. Areas with waterfront parks were considered very scenic; those congested by cars and boats the opposite. To obtain a better understanding of the factors contributing to positive and negative assessments, a more detailed analysis of the elements contained in each photograph was undertaken. Findings are reported in the technical supplement "Aesthetic Resources of the Coastal Zone".





Some harbor areas were considered very beautiful...others quite the opposite.

Shoreline Areas Needing Protection

Aesthetic considerations may suggest a need for development controls in some areas. In others, protection may be desirable on different grounds. To determine the types of areas for which protection may be justified, respondents were asked to suggest appropriate areas from their island photo panel. Table 26 displays responses by shoretypes to provide an indication of the relative importance of protection in different areas (see Apendix C for complete tabulations of responses by photo panel).

TABLE 26

SHORETYPES WHICH MAY NEED PROTECTION FROM OVER DEVELOPMENT*

Shoretypes	Shoretype Protection Rate**
Sand Beach (Undev.)	14.5%
Sand Beach (Dev.)	11.5
Developed: Harbor	8.5
Mangroves (Undev.)	7.4
Rocky Beach (Undev.)	6.0
Steep Rocky (Undev.)	6.0
Low Relief (Undev.)	5.9
Salt Pond (undev.)	3.7
Mangroves (Dev.)	3.4
Steep Rocky (Dev.)	2.1
Developed: Industrial	2.1
Salt Pond (Dev.)	1.8
Dead Mangroves	1.6

N=461

* Question #15 - "If yes," (to question #14 - "Are there any shorelines which should be protected from over development?") which types?" (indicate no more than three).

** Percentages do not equal 100% since they are averages of respondants' reactions to all photographs in a particular category. A protection rating was calculated for each photo by island panel (the frequency % of all nominations for that island). Rates for all examples of a given shoretype were then averaged. Protection ratings for each shoretype were based on the average of example ratings rather than composite ratings (total frequency %) due to differences in the number of examples of a given type and also in the number of respondents assessing each island photo set.

Respondents were also requested to identify areas perceived to be appropriate for various types of shoreline development. Viewing shoreline protection nominations in light of respondents' perceptions of both appropriate use (Table 27) and scenic quality (Table 25) is revealing of public attitudes towards different shoretypes. Respondents' perceptions of coastal problems provide additional insights.

Sand beaches, which were ranked the highest in terms of both scenic and recreational use, are clearly considered most in need of protection. Concern

about overdevelopment of harbor areas and undeveloped mangroves is also fairly widespread, but probably for somewhat different reasons. Neither are considered to have particular recreational value. Nor were harbor areas generally considered very scenic, but the few examples that were tend to be the areas nominated for protection. Respondents' perceptions of potential pollution and congestion problems may also have been contributory. Undeveloped mangroves on the other hand, were considered to have moderately high scenic value. This nomination for protection may also reflect respondents' concern about the loss of natural areas.

To a lesser extent, there appears to be some support for protection of other undeveloped shoretypes: rocky beaches, steep rocky and low relief shores. Concern about loss of natural areas might be the rationale, since none of these types were highly valued for either scenic or recreational qualities. Of all the undeveloped shoretypes, there was least support for protection of salt ponds. The remaining shoretypes are all developed to some extent and are not perceived as warranting protection.

LOCATION OF FUTURE DEVELOPMENT

After expressing attitudes towards coastal development and assessing both coastal amenities and the need for shoreline protection, respondents were asked to consider the location of future development. As Table 27 indicates, there seems to be great support for the notion that future development should follow existing development patterns and that undeveloped areas should be kept for recreation and conservation.

Respondents perceived new industry as best accomodated in areas already developed for industrial purposes. Areas of dead mangroves and salt ponds were also seen as appropriate. Existing harbor areas were considered the best place for commercial development. Apparent support for commercial use of developed beaches, however, is misleading, since it is all attributable to the responses to one photo of the beach in Cruz Bay Harbor. A wider array of coastal areas were viewed as suitable for residential use, all of which were developed shoretypes having at least some existing housing; developed salt ponds, rocky shore, mangroves and sand beaches.

TABLE 27

SHORETYPE UTILIZATION*

SHORETYPE (in order of protection)	USE**				
	Conservation	Recreation	Residential	Commerce	Industry
Sand Beach (Undev.)	13.1%	31.9%	1.5%	1.8%	0.6%
Sand Beach (Dev.)	1.4	17.5	10.7	16.7	4.7
Developed: Harbor	7.6	2.3	5.4	19.1	8.7
Mangroves (Undev.)	20.9	5.4	1.2	2.1	3.4
Rocky Beach (Undev.)	5.3	5.4	6.1	1.3	8.9
Steep Rocky (Undev.)	6.5	2.1	4.8	1.3	3.2
Low Relief (Undev.)	5.7	6.2	3.4	3.3	2.6
Salt Pond (Undev.)	8.6	2.8	1.9	3.9	9.5
Mangroves (Dev.)	1.6	1.5	11.6	2.0	2.4
Steep Rocky (Dev.)	1.7	1.1	16.0	2.5	1.4
Developed: Industrial	1.7	1.5	0.6	3.5	36.0
Salt Pond (Dev.)	1.2	2.0	20.6	2.1	10.0
Dead Mangroves	3.0	1.2	1.2	4.6	32.2

N=626

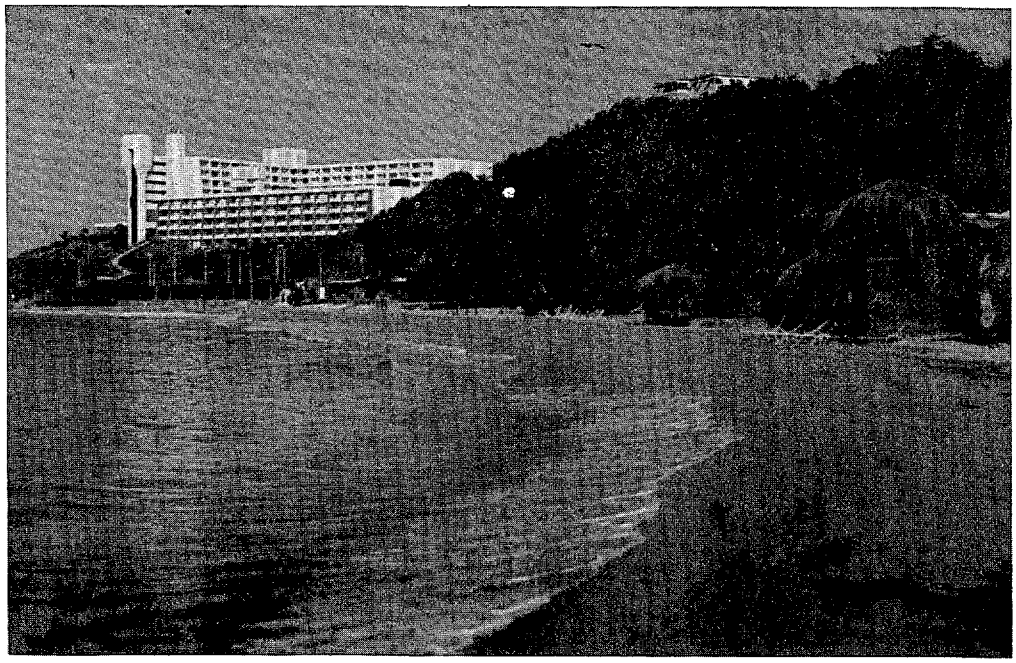
* Question #17 - "Which types of areas might best be used for each of the following types of development (indicate up to two types for each)."

** Figures reflect the average of respondents' reactions to all photographs in a particular category (see note on Table 26).

Developed sand beaches, however, were more often viewed at appropriate for recreation. All other areas considered suitable for recreation were undeveloped: low relief shores, mangroves, rocky beaches and, most frequently of all, undeveloped sand beaches.

The shoretypes where conservation/parkland status was considered appropriate roughly parallel those assessed to be in need of protection from overdevelopment. However, the pattern varies enough to suggest that people may distinguish between the two concepts. As noted above, areas for protection included primarily those with high recreational or scenic value. The importance of undeveloped areas appears to increase in connection with conservation/parkland status, as evidenced by the importance attached to conservation of undeveloped mangroves and salt ponds when compared to their rankings for protection. Conversely, developed sand beaches, which were high on the protection list were almost never mentioned for conservation.

In harbor areas, protection and conservation were considered about equally important overall, but the examples being nominated varied. Protection was more often called for in areas with intense development and activity; conservation in those having waterfront parks. This suggests that while shoreline protection and conservation are both measures associated with areas of high value, the former may be seen as more appropriate in places where intensive utilization is desirable, and conservation where it is not.



Development controls, but not prohibition.

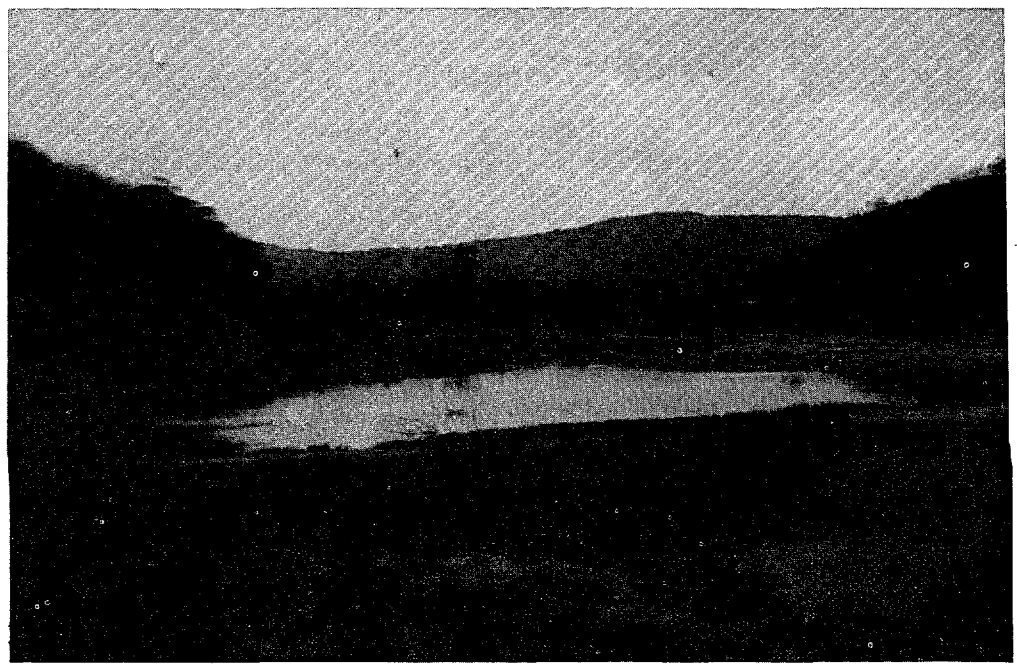
Consideration of the data in Table 27, from the standpoint of shoretypes, rather than uses, provides a good indication of the extent of public consensus regarding shoretype utilization.

There seems to be greatest consensus about the use of three shoretypes: sand beaches, harbors and undeveloped mangroves. Very wide public support apparently exists not only for recreational use of undeveloped sand beaches, but also for either conservation or protection measures to safeguard them. Although most respondents seem to feel similarly about protecting the recreational use and value of developed beaches, a good percentage feel that since some development already exists, be it residential or commercial, additional development of the same sort would be appropriate. There is apparently wide support for locating commercial activities in harbor areas, and to a lesser extent industry and housing. There also seems to be broad agreement that conservation is in order for undeveloped mangroves, since no other uses, except perhaps recreation were considered very appropriate.

Attitudes regarding industrial areas as well as developed mangroves, steep rocky shores and salt ponds appear to reflect, in all instances, the type of development shown in the photographs. In other words, attitudes towards appropriate use were probably influenced by existing use.

There appear to be mixed feelings regarding the use of undeveloped rocky beaches, low relief and steep rocky shores. While there is some support for conservation, a variety of uses particularly residential or recreation are also viewed as suitable. Responses regarding undeveloped salt ponds are bimodal. Roughly equal support was expressed for intensive development (industry, commerce) as for conservation and protection.

In sum, there is apparent consensus regarding the use of beaches, harbors and undeveloped mangrove areas. Respondents were not in strong agreement about most of the others, and definitely not in accord about undeveloped salt ponds.



Conservation or industrial development?

RESPONDENTS' COMMENTS

At the end of each interview, the respondent was asked for additional comments and/or suggestions. One in eight had further comments. Roughly half of those commenting expressed reactions to the survey itself; the rest had issue-oriented comments. Issue-oriented statements covered a wide array of topics which tend to fall into three general categories: those related to development opportunities; those related to development controls; and those related to beach utilization (Table 28). The first category covers suggestions for a range of economic and amenity projects that were considered needed or desirable. Comments pertaining to development controls included expressions of appreciation for a variety of coastal assets, of concern about perceived threats, and occasional suggestions for ameliorating development-induced problems. Comments about beach utilization ranged from a general "free the beaches" sentiment to more specific concerns about particular places and problems. Issue-oriented comments are itemized in Appendix C.

TABLE 28

RESPONDENTS' COMMENTS

Comments	St. Croix	St. Thomas	St. John	Territory
Good Idea	29	24	-	53 (51.0%)
Dev. Controls	-	19	4	23 (22.1%)
Dev. Opportunities	4	10	2	16 (15.4%)
Beach Utilization	4	8	-	12 (11.5%)
				104

Respondents commenting on the survey itself expressed generally positive reactions. Many felt that the survey was interesting and informative; that going to the people was a good idea; and that both the survey and coastal planning were long overdue. While there were no negative comments per se, there was a certain amount of skepticism that results would be made public or that the survey would have much impact.

Interviewees' comments provide one indication that the survey had at least some success in meeting both of its goals. It seems to have not only informed and caught the interest of many participants, but also provided additional information from people about the coastal development issues that concern them most.

Newspaper Survey

This section presents the results of the newspaper survey. After a brief description of questionnaire respondents, results are analyzed in terms of the extent that responses support or amplify household survey findings. A complete tabulation of newspaper survey data is contained in Appendix D.

NEWSPAPER SURVEY RESPONDENTS

As mentioned earlier, response to the newspaper questionnaire was expected to be, and was, quite small: 69 from St. Croix; 82 from St. Thomas; and 3 from St. John, for a total of 154. Inspection of demographic data indicates that the newspaper survey was more representative of men and of white collar workers than the household survey. Comparison of newspaper and interview responses suggests that participants were probably from the sector of the population having higher than average education. With a sample of this size, cross-tabulation of demographic and substantive questions was not practical.

TABLE 29

COMPARATIVE DEMOGRAPHIC DATA

	Newspaper Survey	Household Survey	1970 Census
Sex			
Male	58.4%	37.8%	49.8%
Female	41.6	62.2	50.2
Occupation			
White Collar	66.7%	28.8%	22.9%
Blue Collar	4.7	10.9	23.3
Services	11.3	17.7	17.0
Housewife	4.0	27.9	20.8
Retired	2.0	7.2	3.2
Student	10.0	2.1	5.5
Unemployed	0.0	1.6	3.1
None	1.3	3.8	4.2

NEWSPAPER SURVEY RESULTS

SHORELINE UTILIZATION

Personal Use of Coastal Areas

Tables 30 and 31 provide an indication of respondents' coastal recreational habits. As was expected, people use beaches more than other

coastal areas. Beaches are enjoyed by almost everyone and apparently quite often. Many respondents also spend time boating and fishing, and at the waterfront market area on St. Thomas. Most beach users go to swim, but as indicated in Table 31 a variety of other activities were also reported.

TABLE 31

BEACH USE*

Use	Percent of Respondents
Swim	70.2%
Picnic	20.7
Fish	5.9
Snorkel	23.2
Run	14.6
"Lime"	14.6

* Question #8 - "What is your main reason for going there (beaches used)?" Percentages do not total 100% since many respondents engage in more than one activity.

TABLE 30

USE OF COASTAL AREAS*

Go:	Percent of Respondents	Times Per Month
To the beach	92.0%	7.0
Fishing	32.4	3.5
Boating	56.3	4.5
To the waterfront	26.5	4.5

* Question #5 - "How many of the following activities do you engage in? ...indicate how ofter you do them." (Percentages do not total 100% since many respondents engage in several activities).

Respondents were asked which beaches they had used in the past year, and in particular which beach they used most often. While many beaches were named, respondents from St. Thomas and St. John tend to agree on which are used most: Magens, Coki, Sapphire, Lindbergh, Brewers and Hull Bay beaches are all very popular on St. Thomas, as are Trunk and Hawknest Bays on St. John. On St. Croix, Cramer Park and Davis beaches were named most often but respondents also tended to disperse more evenly to many places.

Most respondents (61.7%) also named beaches they did not use, but would like to. As Table 32 indicates, the lack of adequate road access to a beach or the perception that it is exclusively private are most apt to keep people away. The lack of beach facilities and questions of safety were

also of concern to many. A complete tally of reported beach attendance and non-attendance is contained in Appendix C, Table 55.

TABLE 32

PERCEPTIONS OF OBSTACLES TO GREATER BEACH USE*

Obstacle	Percent of reasons given
Poor road access	29.5%
Exclusively private	27.3
Lack of facilities	15.2
Safety	12.9
Lack of transportation	8.3
Expense	6.8
	100.0%

* Question #11 - "Why don't you use them (beaches not used)?"

Existing and Future Development Patterns

When asked to assess the most important current uses of shoreline areas, newspaper survey respondents ranked public beaches and conservation way above all others. As Table 33 indicates, marinas, cruiseship docks, and hotels/condominiums -- all tourist uses -- were also ranked fairly high.

TABLE 33

PERCEPTIONS OF THE THREE MOST IMPORTANT SHORELINE USES*

	% OF RESPONDENTS MENTIONING			
Use	St. Croix	St. Thomas	St. John	Territory
Public beaches	63.1%	84.8%	100.0%	75.5%
Conservation/parks	67.7	75.9	100.0	72.7
Marinas	30.8	36.7	33.3	34.0
Cruiseship docks	18.5	38.0	0.0	28.6
Hotels/condominiums	33.8	22.8	0.0	27.2
Industry	29.2	2.5	0.0	14.3
Freight docks	13.8	11.4	0.0	12.2
Public utilities	3.0	7.6	0.0	5.4
Shops & restaurants	4.6	2.5	0.0	3.4
				273.3%

* Question #13 - "Which of the following do you think are currently the most important uses of the shoreline? (Check the three most important)". Since three responses were permitted maximum total response would equal 300.0%).

Moreover, when asked to assess whether there is sufficient coastline devoted to these uses (Table 34), respondents indicated that conservation/parklands and public beaches are the two main deficiencies. Over 83% of all respondents felt there is too little conservation/parkland and over half indicated there should be more public beaches. A need for more marinas and port facilities was also expressed. However, waterfront shops,

restaurants, hotels, condominiums, and industry were generally seen to be in adequate or excess supply.

TABLE 34

PERCEPTIONS OF THE ADEQUACY OF CURRENT SHORELINE USES*

Use	% OF RESPONDENTS MENTIONING			
	Too Much	Enough	Too Little	No Opinion
Conservation/park	0.7%	8.7%	89.2%	1.4%
Public beach	0.0	37.1	62.1	0.8
Marinas	6.0	51.2	35.3	7.5
Cruiseship docks	6.0	60.6	30.8	2.6
Freight docks	7.5	53.4	25.8	13.3
Utilities	11.2	52.0	17.6	19.2
Industry	31.3	47.8	14.9	6.0
Hotel/condominiums	30.8	52.4	13.3	3.5
Shops/restaurants	13.6	64.0	14.4	8.0

* Question #13 - "Do we have enough, or do we need more of the following uses? (check the box that most closely reflects your opinion)".

It must be remembered however, that the newspaper survey sample was very small, and it was hypothesized it would be more representative of the better educated residents. Responses do show the same inclination towards conservation and recreation evinced by the more educated component of the household survey.

LOCATION OF FUTURE DEVELOPMENT

Assuming various types of intensive coastal development would occur in the future, people were asked what shoretypes could best accommodate it. Table 35 shows that developed areas, low relief and steep rocky shores as well as rock and gravel beaches were most often nominated. These findings are consistent with household survey findings, although interviewees were also somewhat more supportive of developing salt ponds, and both sand beaches and mangroves which already have some development.

TABLE 35

SHORETYPES MOST SUITABLE FOR INTENSIVE DEVELOPMENT*

Shoretype	Percent of Total Nominations
Developed areas	21.0%
Low relief	18.5
Steep rocky shores	17.5
Rocky and gravel beaches	14.7
Salt ponds	11.8
Mangroves	9.0
Sand beaches	7.5
	100.0%

* Question #14 - "Which types of shorelines do you feel might best be used for intensive development (such as large hotels, factories, docks, utilities)? Check no more than three".

SHORELINE PROTECTION

When asked if there are any types of shoreline that should be protected from intensive development, 97.4% concurred. As Table 36 indicates, sand beaches, mangrove and salt pond areas were mentioned most. Newspaper respondents seemed to be more concerned than interviewees about salt ponds and much less so about harbor areas. It is important to note however, that the newspaper respondents did not have the benefit of the photographic examples of shoretypes that were used in the household survey.

TABLE 36

SHORETYPES NEEDING PROTECTION FROM OVER-DEVELOPMENT*

Shoretype	Percent of Total Nominations
Sand beaches	30.1%
Salt ponds	23.3
Mangroves	22.8
Rocky & gravel beaches	7.3
Developed areas	6.8
Steep rocky shores	5.5
Low relief	4.2
	100.0%

* Question #15 - "Which types of shoreline, if any, should be protected from intensive development? Check no more than three".

Finally, shoretypes which respondents felt should be protected from all development are recorded in Table 37. Again, results are generally consistent with household survey findings: sand beaches and mangroves are of greatest concern. However, attitudes toward salt ponds tend to reflect one side of the bimodal response expressed in the household survey: the conservation viewpoint.

TABLE 37

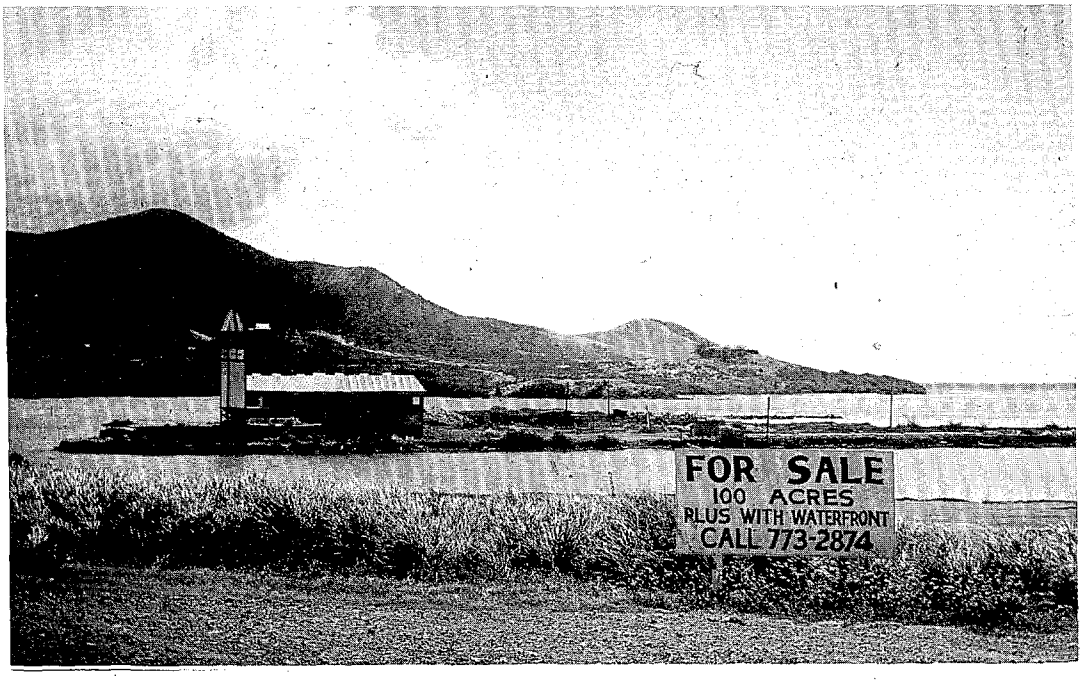
SHORETYPES NEEDING PROTECTION FROM ALL DEVELOPMENT*

Shoretype	Percent of Total Nominations
Sand beaches	28.9%
Mangroves	22.9
Salt ponds.	22.2
Steep rocky shores	8.5
Rocky & gravel beaches	7.3
Low rocky relief	5.8
Developed areas	4.4
	100.0%

* Question #16 - "Are there any types of shoreline you feel should be protected from all development?"

4

SUMMARY AND CONCLUSIONS



Consensus?

Survey Results

The household and newspaper surveys provide important and interesting insights regarding perceptions of and attitudes towards coastal areas.

The data suggest that there is strong consensus on many issues, notably: the importance of coastal recreation and improving beach access; the encouragement of agriculture; the recognition of water pollution as a significant problem; the high value attached to sand beaches, undeveloped mangroves and some harbor areas; and the importance of protecting such areas from overdevelopment. Such consensus suggests the possibility of broad public support for appropriate action on these issues. In many instances, however, attitudes were found to be divided. Public or private activity in these areas is more likely to be controversial, particularly so for issues where large dissenting sub-groups have been identified. Since these surveys are but one of many inputs in developing a Coastal Zone Management Program for the Virgin Islands, results will be weighed most heavily when consensus is clear.

This chapter summarizes findings, focusing on the nature and extent of apparent public agreement as it relates to further action - via Coastal Zone Management or other means. Findings are summarized first with reference to general issues and individual islands and second, with reference to specific coastal environments.

COASTAL DEVELOPMENT: A QUESTION OF VALUES AND RESOURCES

Regarding the relative importance of economic, natural and amenity values, the public appears to be divided, primarily along educational lines.

The more educated would most like to see conservation and recreational development emphasized; the less educated tend to place greatest emphasis on economic development. This division is greatest with respect to broad categories of future coastal development (commercial,residential, etc.) but is also reflected in differing preferences within specific ategories of development. Public attitudes regarding coastal development also varies along geographic lines. Differences among the islands tend to reflect differences in both available resources and the feasibility of future development.

TERRITORY-WIDE DEVELOPMENT PRIORITIES

While there is apt to be considerable disagreement among population sub-groups as to the importance of economic development, there at least appears to be considerable consensus Territory-wide that agriculture and food-processing industries should be emphasized first.

The extent of support for tourism varies among the islands, but respondents across the Territory tend to prefer hotel/guest house and cruise ship related developments over other forms of tourism development.

A great majority of all respondents also agreed on the importance of coastal recreational development, if not on its first priority. There is considerable support throughout the Territory for the improvement of beach access and to a lesser extent, for the development of beach facilities. The newspaper survey provided a great deal of information about existing patterns of recreational activity, including a listing of beaches where access is considered an issue. Poor roads or an exclusively private atmosphere were the most frequently cited obstacles, although the lack of facilities and safety also concern many.

Respondents feel that poor roads or an exclusive atmosphere are the main beach access problems.

ISLAND DEVELOPMENT PRIORITIES

St. Croix

Recreational development, and beach access in particular, is apparently of greater importance on St. Croix than on the other islands, with respondents from Christiansted expressing the greatest concern. Interest in beach facilities, waterfront parks and fishing piers is also quite strong, but varies among island sub-areas.

Compared with the other islands, concern about conservation is also somewhat more widespread. Interest in commerce and industry, however, is less so. Agriculture and light industry are clearly the most widely supported and preferred modes of economic development. While support for heavy manufacturing is not large, it is larger than on the other islands. Interest in fishing and tourism, on the other hand, appears to be weakest on St. Croix.

With respect to tourist development modes, respondents from St. Croix shared the Territory-wide consensus that hotels/guest houses and cruise ships are preferred. There are, however, more people who would give first priority to condominium/second home development on St. Croix than on the other islands.

St. Thomas

Survey data indicate that development preferences may be least clear on St. Thomas. Residential and recreational development were widely supported, but were not listed as a first choice by many. Conversely, relatively large numbers of respondents' first choice was either industry or conservation -- the two options with least widespread support.

Respondents were more united in their support for agriculture, light industry, and to a lesser extent, tourism as modes of economic development. Regarding tourism, there was agreement with the Territory-wide preference for hotel and cruise ship development. Respondents also supported Territory-wide recreational concerns: beach access was paramount, with beach facilities, fishing piers and waterfront parks also of interest in some areas.

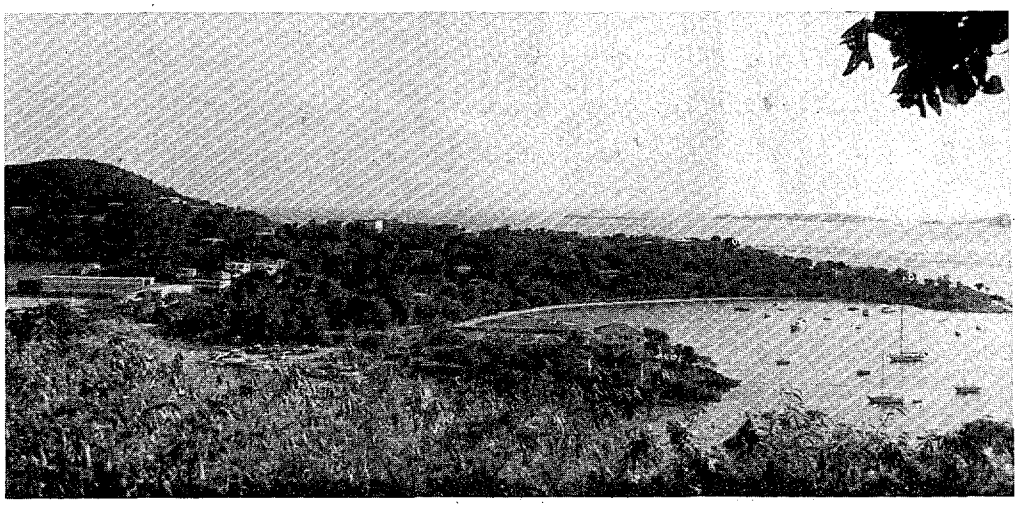
St. John

Respondents from St. John seem to be in considerable agreement with respect to overall development priorities. Residential and commercial development are of greatest concern. Interest in conservation is less wide-spread, but of importance to a sizable sub-group.

Very little interest in either light or heavy industry was expressed, but strong support was indicated for the development of agriculture, tourism, and fishing. Indeed, interest in fishing and tourism appears to be stronger on St. John than anywhere else in the Territory.

Clear support was expressed for hotel/guest house and cruise ship development, in agreement with Territory-wide preferences for tourist development. However, equally clear and strong support was indicated for developing boating.

While recreational development is rarely considered to be of first priority, it is widely acknowledged as important. As elsewhere, improvement of beach access is of first concern to the largest number of people, although there is considerably broader support for, and almost as many respondents giving high priority to the development of waterfront parks. The creation of fishing piers also evokes considerable interest.



St. John respondents expressed more interest in residential, commercial and tourist development, particularly boating.

SHORELINE PROTECTION: ASSETS AND IMPACTS

While coastal development priorities do vary considerably both by island and by educational sub-group, there is a great deal of agreement about the need to avoid overdevelopment. Fully 70 percent of those interviewed and 97 percent of the newspaper respondents felt that there are shoreline areas which should be protected from overdevelopment. Less than eight percent oppose the concept. Respondents cited a variety of reasons for protection; primarily appreciation for scenic, recreational and natural features, and occasionally concern about possible negative impacts from overdevelopment.

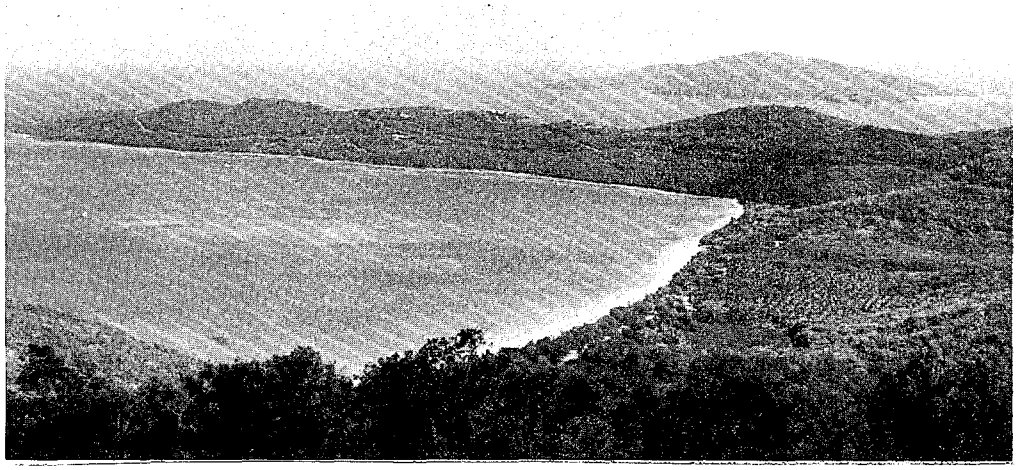
Several other questions provided additional information about the values respondents associate with coastal areas, and their development-related concerns. First, scenery and sand beaches were ranked, along with weather and duty-free shops, as the Territory's most important tourist attractions. This suggests that aesthetic and recreational resources may be valued not only as amenities, but also for their contribution to the economy.

Second, there appears to be considerable agreement with respect to respondent's perceptions of scenic quality. Assessments of the different types of shoreline areas revealed that sand beaches, both developed and undeveloped; harbors with waterfront parks, and undeveloped mangroves are considered to have the highest scenic value. Undeveloped salt ponds, dead mangroves, and industrial areas have the least.

Third, responses regarding appropriate utilization of the various shoretypes indicate that there is also considerable agreement about recreational and natural values. Sand beaches are perceived as having much higher recreational value than all other shoretypes. Undeveloped shoretypes for which conservation was considered the most appropriate use provide a gauge of natural values; Undeveloped mangroves, undeveloped sand beaches, and undeveloped salt ponds ranked the highest.

Fourth, when asked to assess the Virgin Islands' most important coastal problems, respondents tended to agree that water pollution, the loss of important natural areas and sand removal were most pressing, although perceptions of their relative significance varied among the islands.

Finally, respondents' assessments of the need for protection in different areas provides a good indication both of the composite value of each shoretype, and of the magnitude of respondents concern about development induced problems. The most highly valued shoretypes were most widely recommended for protection, with sand beaches, harbors, and undeveloped mangroves being nominated most often. To a lesser extent there is also some support for protecting undeveloped rocky beaches as well as steep rocky and low relief shores. Survey data suggest that respondents distinguish between protection and conservation as development controls. Protection tends to be recommended for highly-valued areas where intensive activity is appropriate but may cause problems, whereas conservation, which would preclude further development, is considered justified in areas where intensive activity is inappropriate.



Substantial consensus appears to exist regarding the value and use of sand beaches.

SHORELINE UTILIZATION: THE LOCATION OF FUTURE DEVELOPMENT

Perceptions of the most appropriate locations for various kinds of development indicate that respondents tend to feel future development should follow existing development patterns, and that highly valued undeveloped areas should be reserved for conservation and recreation. Consensus is clearest regarding the utilization of sand beaches, harbors, and undeveloped mangroves. There is less agreement about most of the others, and there are srongly conflicting opinions regarding undeveloped salt ponds. Respondent attitudes about each of the shoretypes are summarized below:

1. Sand beaches (undeveloped)
   - High recreational and scenic value
   - Recreational use and either conservation or protection measures are widely supported.
2. Sand beaches (developed)
   - High recreational and scenic value
   - Recreational use has widest support
   - Expansion of existing use (either residential or commercial) is also considered appropriate by many. Protection from over-development, however, is widely recommended.
3. Rocky Beaches
   - Moderate to moderately low scenic value; some recreational value.
   - Attitudes towards appropriate use were mixed, with no clear consensus emerging.

4. Mangroves (undeveloped)
   - Moderately high scenic value; some recreational value
   - Conservation has very broad support, the most of any shoretype
5. Mangroves (developed)
   - Moderate to moderately low scenic value; low recreational value.
   - Expansion of existing uses (generally residential) was considered appropriate, with little concern about protection expressed.
6. Salt Ponds (undeveloped)
   - Low scenic and recreational value.
   - Attitudes regarding appropriate use are divided between those favoring conservation and those favoring industrial development.
7. Salt Ponds (developed)
   - Moderate to moderately low scenic value; low recreational value.
   - Residential development, the most prevalent existing use, has widest support, although many respondents feel industrial development would be appropriate. Little concern about over-development.
8. Developed: Harbors
   - Moderately high to moderately low scenic value: low recreational value.
   - Perceived as the most suitable of all shoretypes for commercial activities, although many respondents feel industry is appropriate. Protection from over-development has quite broad support.
9. Developed: Industrial
   - Low scenic and recreational value.
   - Continued industrial use is widely considered the most appropriate. Little concern about over-development.
10. Dead Mangroves
   - Low scenic and recreational value.
   - After existing industrialized areas, was considered the most suitable place for new industrial development. Little concern about over-development.
11. Low Relief Shores (undeveloped)
   - Moderate to moderately low scenic value; some recreational value
   - Sentiment regarding use is mixed, although recreation and conservation were suggested most frequently.

12. Steep Rocky Shores (undeveloped)

- Moderately high to moderately low scenic value, little recreational value.
- Mixed attitudes towards use; although conservation and residential development were suggested most frequently.

13. Steep Rocky Shores (developed)

- Moderately high to moderately low scenic value; little recreational value.
- Continued residential development, the prevailing existing use, is widely considered appropriate. Little concern about over-development.

RESPONDENTS' COMMENTS

Many of the household survey participants offered additional comments and suggestions. Roughly half of these were issue-oriented statements which related to development opportunities, development controls or beach utilization. These provided additional information about people's most pressing concerns, and resulted in a wide range of useful suggestions.

The other half of respondents' comments were reactions to the survey itself. Many felt that the survey was interesting and informative; that going to the people was a good idea; and that both the survey and coastal planning were long overdue. There was some skepticism that the results would be made public or that anything would come of the effort.

Survey Utility

Public attitudes toward shoreline development and protection have been an important factor in developing the proposed Coastal Zone Management Program for the Territory. Public perceptions and attitudes are most clearly reflected in recommended policies regarding shoreline utilization and in the use designations outlined in the "Coastal Land and Water-Use Plan". Survey results were also useful in identifying those areas with particular concern (APC's). Finally, the beach access element of the program will draw on information about beach utilization and the obstacles to more extensive use.

Above and beyond the survey's utility to the Planning Office in formulating a Coastal Zone Management Program for the Virgin Islands, they produced a

wealth of information useful to other Territorial agencies, and perhaps the private sector as well. The Departments of Commerce and of Conservation and Cultural Affairs in particular should find data on public attitudes regarding future economic development and recreational opportunities to be of assistance in their own economic development and recreational planning activities. Appendices C and D contain full tabulations of the newspaper survey data discussed in this report, plus an itemization of the household survey data which is available. Computer print-outs of household survey data can be inspected at the Planning Office.

It is hoped that interested parties will avail themselves of this information. The Territory has undergone dramatic changes in the past twenty years and as might be expected, public values and attitudes are shifting in response. Survey data begin to reveal some of these changes.

5

APPENDICES

Appendix A

HOUSEHOLD SURVEY: Interview Schedule
Photograph Panels

Coastal Planning Interview

Name of interviewer _____ Island _____

Planning Area _____ Number _____

I. Panel B

1. Looking at this panel, which four shorelines are the most beautiful?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 1

2. Which is the most beautiful ? _____

3. Looking at the rest of the photos, which four shorelines do you find least beautiful ?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

4. Which of those is the least beautiful? _____

II. Panel A

5. Looking at this panel, which four shorelines are the most beautiful?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

6. Which is the most beautiful? _____

7. Looking at the rest of the photos, which four shorelines do you find least beautiful ?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

8. Which of those is the least beautiful? _____

III. Non-photo questions - Shoreline use

Now I'd like to ask some general questions about the use of Coastal areas like the ones you've seen.

If you were deciding how coastal areas should be used, which of the following uses would you emphasize first? second? third? (show photo card)

_____ industry (1)

_____ commerce (2)

_____ residential (3)

_____ recreational (4)

_____ conservation/ open space (5)

10. If economic growth does occur, and you could choose, which three of the following types would you favor first? second? third?

_____ heavy manufacturing (such as oil refineries, alumina processing plants, utilities or rum distilleries) (1)

_____ light industry (such as profume, texiles or electrical equipment (2)

_____ agriculture and food processing (3)

_____ tourist industry (hotels, condominiums or cruise ship ship docks) (4)

_____ fishing industry (including culture, processing) (5)

_____ other (please specify) _____ (6

11. If growth in tourism does occur, and you could choose, which type of tourism would you favor first ? second ? third ?

_____ condominium & second home (1) _____ boating (4)

_____ hotel & guest house (2) _____ camping (5)

_____ cruise ship (3)

12. What are the Virgin Islands' main attraction to tourists? (first? second? third?)

_____ duty-free shops (1) _____ weather (4)

_____ scenery (2) _____ beaches

_____ hotels & restaurants (3) _____ friendly people (6)

_____ other (please specify) _____ (7)

13. If more opportunities for recreation and relaxation were being provided, which of the following would you favor first ? second? third ?

_____ improved public access to beaches (1) _____ underwater parks (5)

_____ public beach facilities (2) _____ waterfront parks (6)

_____ public boating facilities (3) _____ other (specify)_____

_____ fishing piers (4) _____ (7

IV. Panel B

We've been talking alot about shoreline use for the islands in general. Now let's talk more specifically about your island St. _____.

14. Are there any shorelines which should be protected from over development?

_____ yes (1) _____ No (2) _____ no opinion (3

15. If yes, which types ? (indicate no more than three)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

16. Why do you feel these areas should be protected?_____

17. (Going back to Panel B) Which types of areas, might best be used for each of the following types of development (show card). You may indicate up to two types of each use

industry 1 2 3 4 5 6 7 8 9 10 11 12 13 14

commerce 1 2 3 4 5 6 7 8 9 10 11 12 13 14

residential 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

recreation 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

conservation/parkland 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

18. What do you think, are the three most important problems relating to the coast ?

_____ beach access (1)

_____ water pollution (2)

_____ flooding by high seas (3)

_____ destruction of important natural areas (such as lagoons, salt ponds)

_____ dredging or removing beach sand needed for construction (5)

_____ decreasing catch of seafoods (6)

_____ other (specify _____)

VI. Personal Questions

To better understand how different types of people view coastal use, the Planning Office would appreciate a little background information.

19. How many years have you lived here? _____

20. Are you planning to stay for good?

yes _____ (1) no _____ (2)

undecided _____ (3)

21. How many grades or classes of school have you completed?

_____ grade school _____ college

_____ high school

22. What is your occupation? _____

23. sex: _____ male (1) _____ female (2)

24. age: _____ 18 to 29 (1)

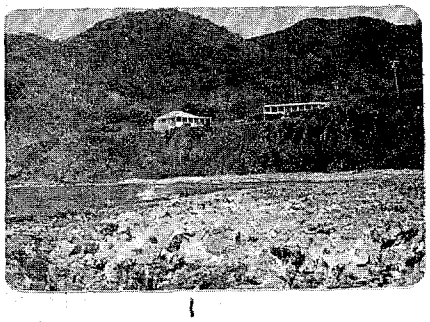
_____ 30 to 39 (2)

_____ 40 to 59 (3)

_____ 60 (4)

25. Comments? _____

_____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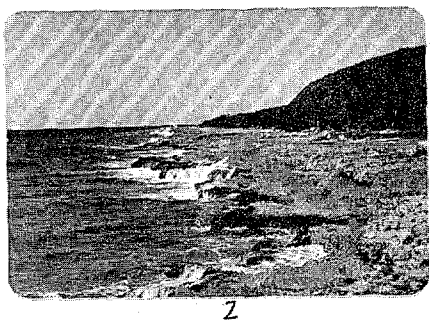
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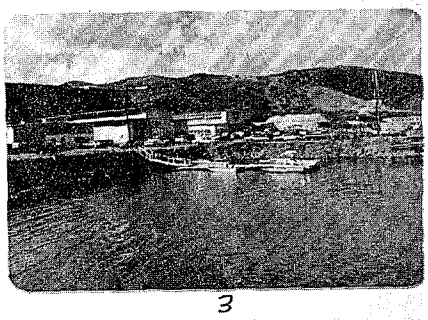
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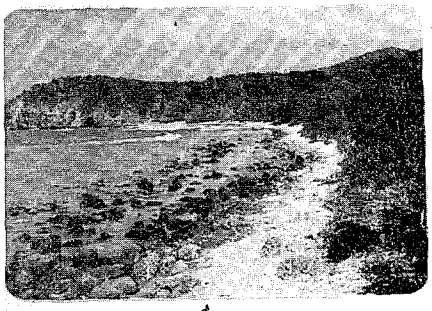
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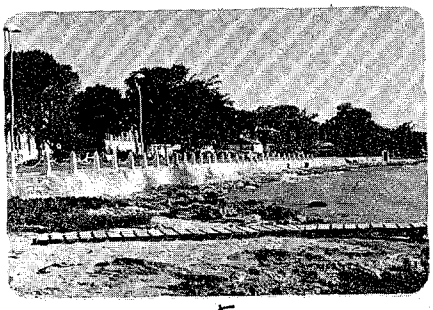
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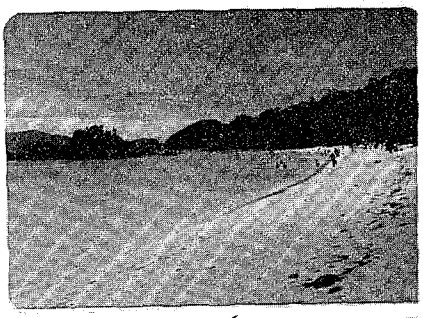
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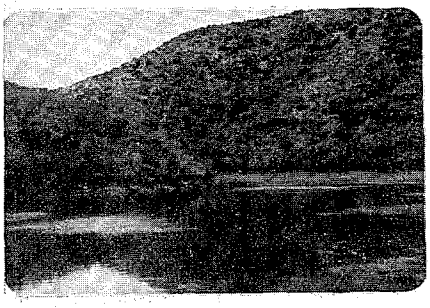
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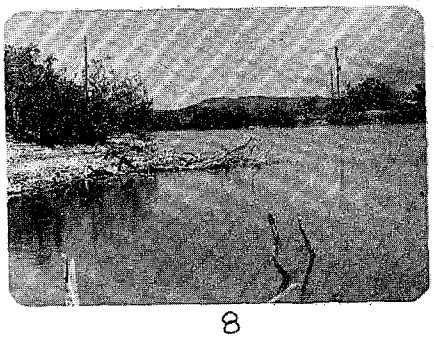
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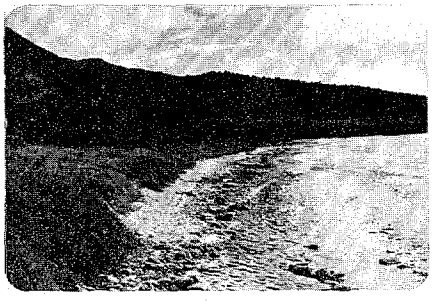
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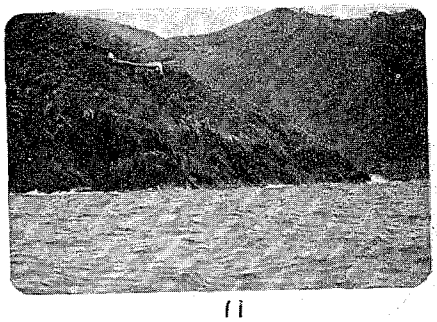
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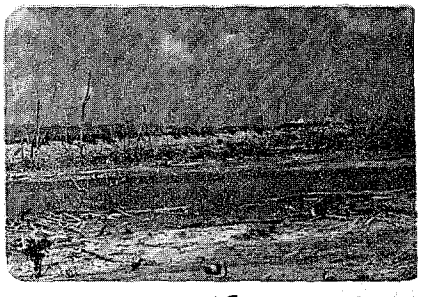
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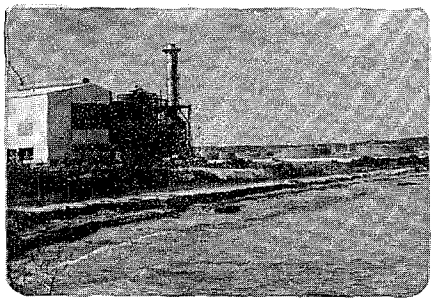
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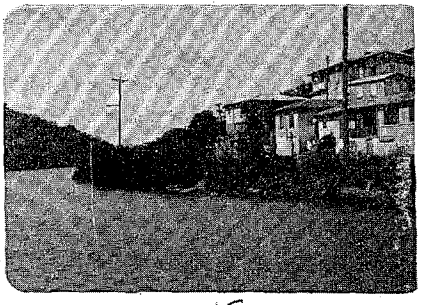
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PANEL A-Territory (originals 2.5"X 3.5" color prints)


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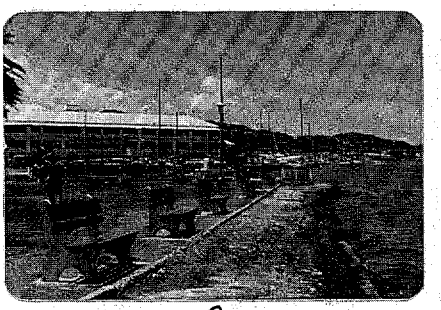
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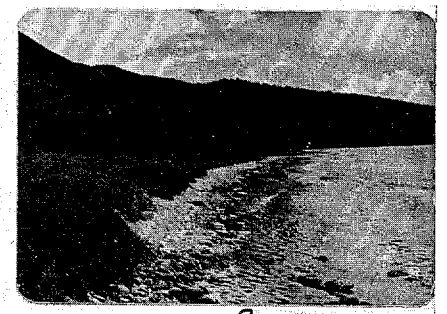
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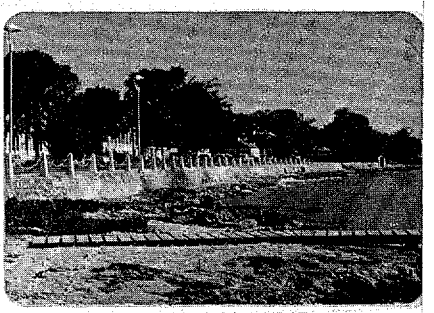
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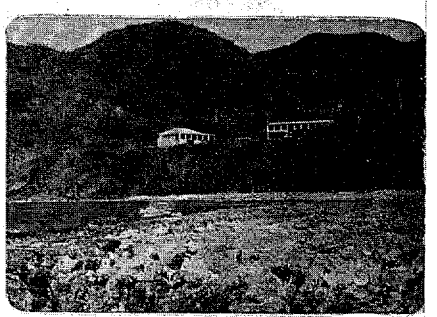
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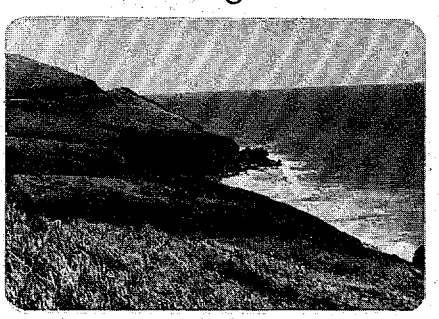
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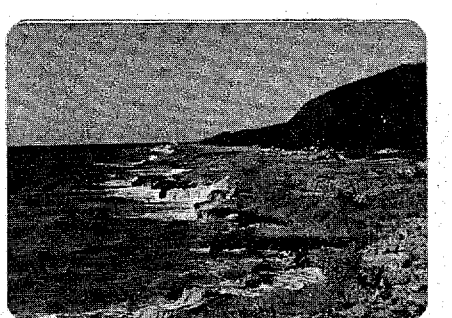
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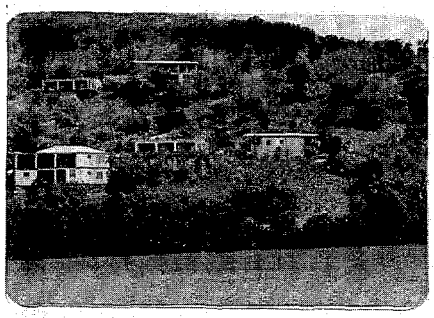
15

PANEL B - St Croix (originals 2.5"X 3.5" color prints)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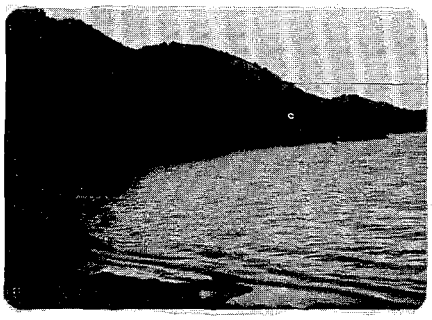
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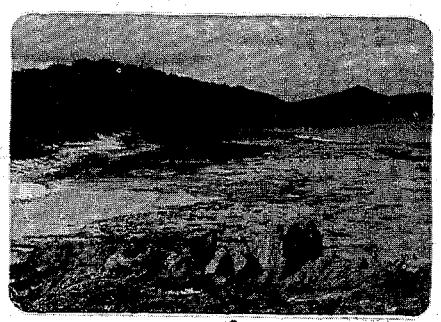
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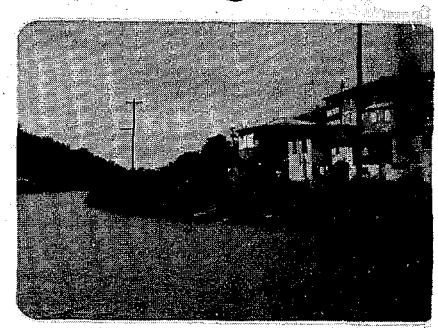
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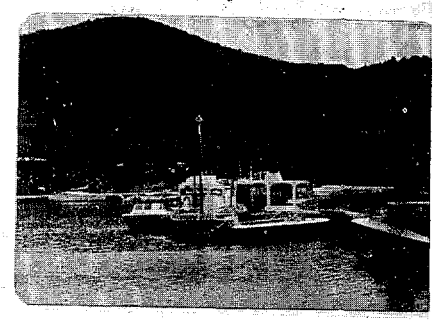
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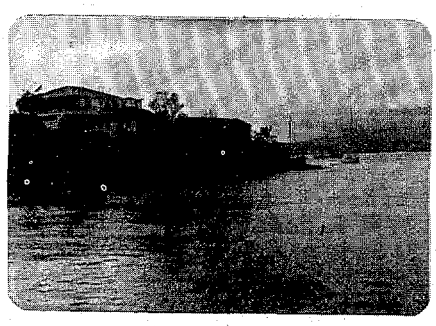
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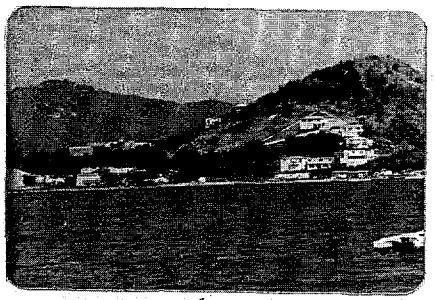
PANEL B St John (originals 2.5"X 3.5" color prints)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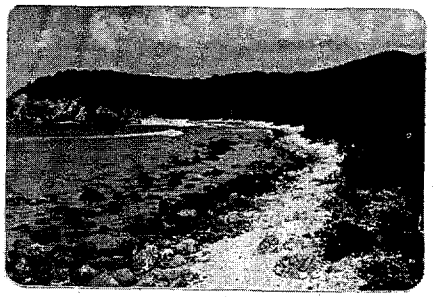
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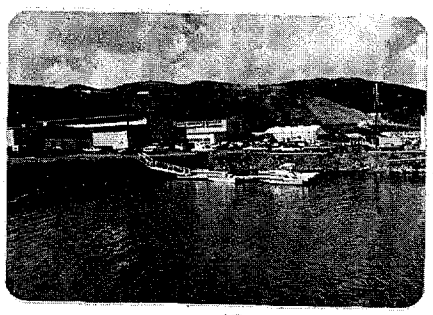
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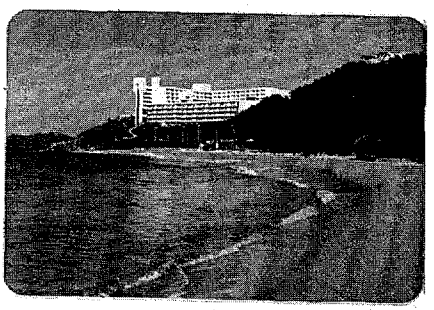
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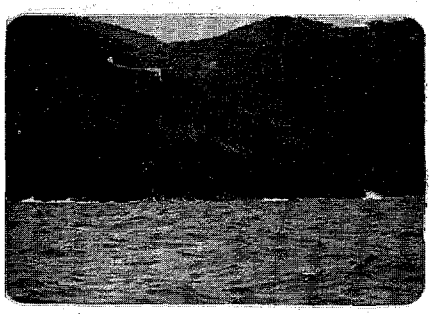
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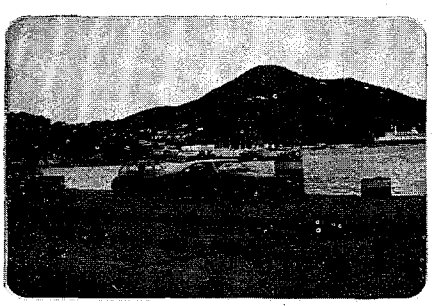
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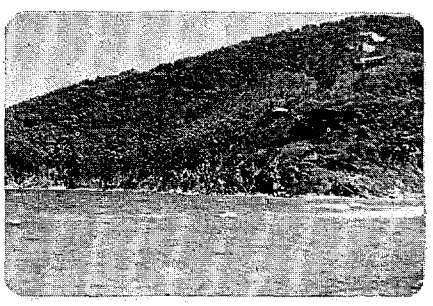
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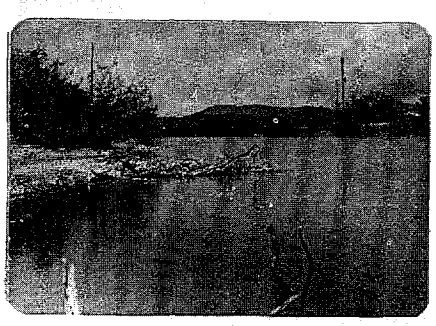
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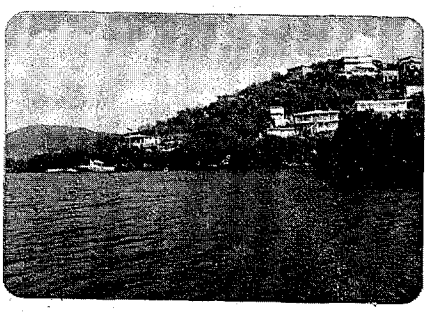
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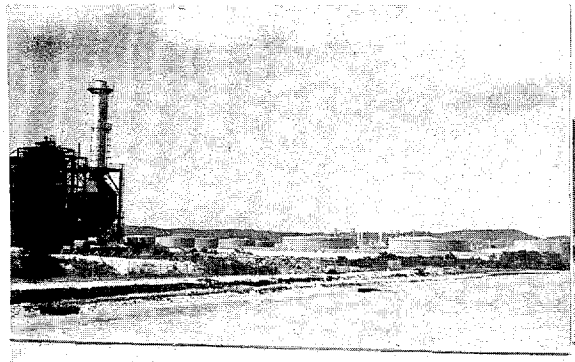

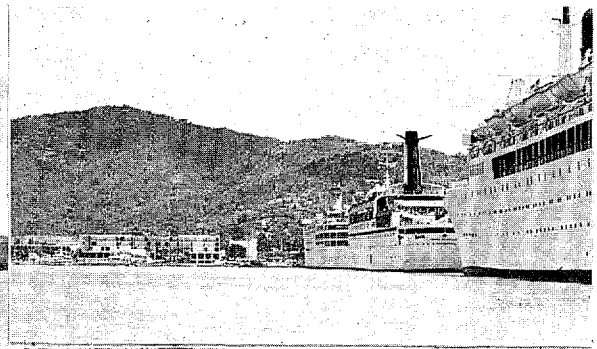

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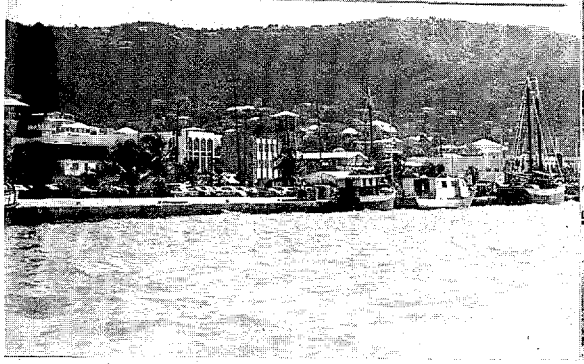

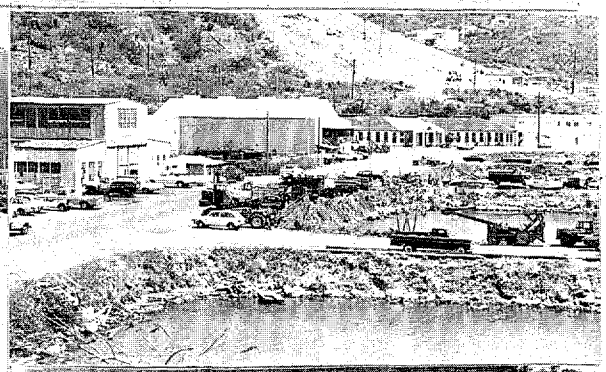

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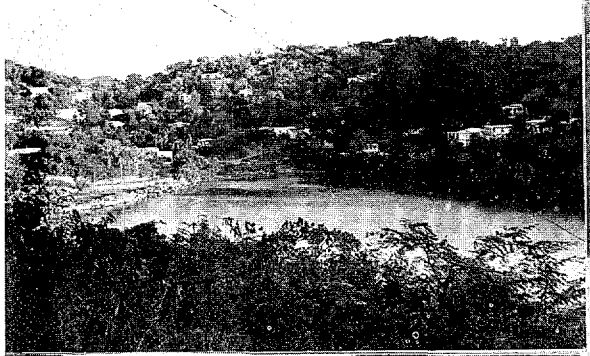

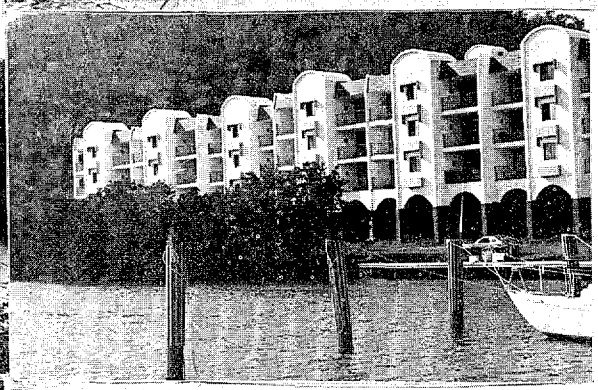

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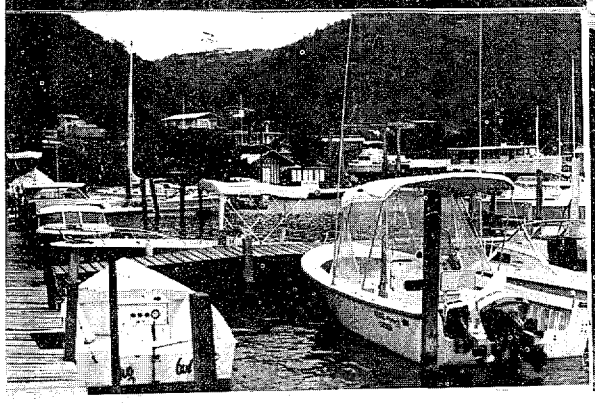
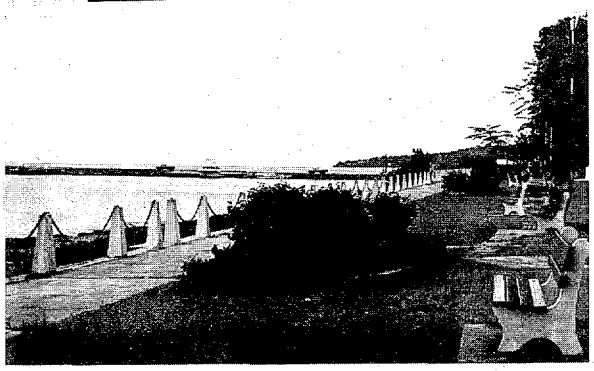


RECREATION



CONSERVATION
OPEN SPACE

PANEL C- Shoreline Uses
(originals 3.5X5 B&W prints)

Appendix B

NEWPAPER SURVEY: Questionnaire

THE VIRGIN ISLANDS OF THE UNITED STATES
OFFICE OF THE GOVERNOR
CHARLOTTE AMALIE, ST. THOMAS

A Message From Governor Cyril E. King
to the People of the Virgin Islands

The magnificent shoreline of the Virgin Islands belongs to each of us who lives here.

Each of us has both the right, and indeed the responsibility, to help determine precisely how these lands and resources will be used.

The Virgin Islands Planning Office presently is preparing a Coastal Zone Management Program to address the critical issue of insuring the wise use of our precious coastal resources. The coastal zone extends three miles seaward and includes all the land on the shores.

I strongly urge all Virgin Islands residents to participate actively and fully in determining the future development of coastal zone resources. I invite and encourage you to complete and return the following questionnaire to the Virgin Islands Planning Office. It is imperative to know your feelings in order to prepare a development plan that truly will reflect the interests of all of us.

Cyril E. King

"THE V. I. COAST — WHAT DO YOU THINK?"

The V.I. Planning Office is developing a program for managing the islands' coastal land and water resources. The intent of the Coastal Zone Management Program is to balance conservation and development in a fashion that best meets Virgin Islanders needs. For this reason, the Planning Office is very much interested in your views regarding present and future uses of shoreline areas.

The questionaire below is the first of many chances you will have to let the Planning Office know how you feel. Just cut it out, fold as directed and mail - it's already stamped and addressed. The Planning Office hopes that you'll take advantage of this and of future opportunities to make your feelings known.

FILL IN BELOW — CUT OUT — FOLD ON DOTTED LINE

A. Background Information

To help us *better understand* how different segments of the population feel about coastal development, the Planning *Office* would like a little *information about you*. Your name is not needed, *all information and opinions will* be treated as group information.

1. Male ☐ female ☐
2. Location of home_____
3. Age group: up to 19 ☐ 40 to 49 ☐ 20 to 29 ☐ over 50 ☐ 30 to 39 ☐
4. What is your occupation?_____
   Are you employed in this occupation? ☐ yes ☐ no
   Are you employed in some other way? ☐ yes ☐ no

B. What the coast means to you.

While it *is* important to weigh the needs for public facilities, for economic development and for environmental protection in determining the best use of our shorelines, we *must not* forget the personal pleasure, the physical and mental well being that can also be *derived from* their use. The Planning *Office* needs to know what value the coast has for you.

5. How many of the following activities do you engage in? (put an X next to those you do and then indicate *how often* you do them).

	no	yes	if yes, how many times, on the average per month?
go to the beach	☐	☐	_____
go fishing	☐	☐	_____
go boating	☐	☐	_____
go marketing at the waterfront	☐	☐	_____
other_____	☐	☐	_____

6. Which beaches did you go to in the past years?

_____

_____

_____

7. Which beach do you go to most often?

_____

8. What is your *main* reason for going there? (put an X next to only one)

to swim ☐ to "lime" ☐ to fish ☐ to snorkel ☐ to picnic ☐ other ☐ to run or walk ☐

9. Are there *any* beaches you do not use, *but* would like to? ☐ yes ☐ no

10. *If so, list no more than three.*

_____

_____

_____

11. Why don't you use them?

☐ transportation ☐ no facilities ☐ expense ☐ exclusively *private* ☐ no road access

☐ other_____

C. Types of Shoreline development

Because development *pressures* are *most* intense in coastal areas, it is vital that we determine how the as yet undeveloped shorelines can best be used.

12. Which of the following, do you think *are currently* the most important uses of the shoreline? (check the *three* most important)

☐ industry ☐ marinas ☐ cruise ship docks ☐ shops and restuarants ☐ *public* beaches ☐ *conservation/* park lands ☐ hotels and condominiums ☐ public *utilities* ☐ freight facilities ☐ other

13. Do we have enough, or do we need *more* of the following shoreline uses (check the position *that most* closely reflects your opinion)

	too much	enough	too little	no opinion
marinas	☐	☐	☐	☐
hotels & condominiums	☐	☐	☐	☐
conservation/ park lands	☐	☐	☐	☐
industry	☐	☐	☐	☐
public beaches	☐	☐	☐	☐
freight facilities	☐	☐	☐	☐
shops & restaurants	☐	☐	☐	☐
public utilities	☐	☐	☐	☐
cruise shop docks	☐	☐	☐	☐
other_____	☐	☐	☐	☐

PLEASE FOLD ON THIS LINE

D. Location of Shoreline development

Some parts of the shore are more suitable for development than others. It is important to determine which should be protected to maintain environmental quality, and which can best be used to accommodate needed development.

14. Which types of shorelines, do you feel might best be used for *intensive* development (such as large hotels, factories, docks, power, water or sewage treatment plants). Check no more than *three*.

☐ sand beaches ☐ mangrove swamps ☐ gravel & rockey beaches ☐ shoreline ☐ other_____ ☐ low rocky or clay bluffs ☐ salt ponds and flats ☐ steep rocky ☐ developed waterfronts

15. Which types of shoreline, if any, *should* be protected from *intensive* development (check no more than three)

☐ salt ponds and flats ☐ gravel & rocky beaches ☐ clay bluffs ☐ steep rocky shoreline ☐ other_____ ☐ developed waterfronts ☐ mangrove swamps ☐ low rocky or ☐ sand beaches

16. Are there *any* types of shoreline you feel *should* be protected from *all* development?

☐ gravel & rocky beaches ☐ low rocky or clay bluffs ☐ steep rocky shorelines ☐ mangrove swamps ☐ other_____ ☐ developed waterfronts ☐ salt ponds & flats ☐ sand beaches

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Appendix C

HOUSEHOLD SURVEY DATA

TABULATIONS OF: Selected photo questions by island

Selected non-photo questions by survey sub-areas

Respondents' comments

Selected cross-tabulations

Information available for inspection at Virgin Islands Planning Office

Other data obtainable

TABLE 38

ST. CROIX RESIDENTS' ATTITUDES TOWARDS SHORETYPE PROTECTION AND/OR UTILIZATION

Photo #	Shoretype	Protection*	USE**				
		f (%)	Conserv. f (%)	Residential f (%)	Recr. f (%)	Comm. f (%)	Ind. f (%)
1	Steep Rocky (undev.)	24(3.4)	29(4.4)	53(8.1)	9(1.4)	12(1.9)	24(3.7)
2.	Developed: Harbor w/park	75(10.8)	103(15.7)	23(3.5)	43(6.5)	179(27.7)	12(1.8)
3.	Rocky Beach (undev.)	69(9.9)	36(5.5)	72(11.0)	56(8.5)	19(2.9)	13(2.0)
4.	Developed: Industrial	15(2.1)	11(1.7)	4(0.6)	10(1.5)	23(3.5)	235(36.0)
5.	Mangroves (undev.)	49(7.0)	97(14.7)	8(1.2)	49(7.4)	12(1.9)	13(2.0)
6.	Developed: Harbor w/park	65(9.3)	99(15.1)	13(2.0)	16(2.4)	202(31.3)	11(1.7)
7.	Low Relief (undev.)	27(3.9)	39(5.9)	17(2.6)	70(10.6)	37(5.8)	25(3.8)
8.	Mangroves (dead)	11(1.6)	20(3.0)	8(1.2)	8(1.2)	30(4.6)	210(32.2)
9.	Steep Rocky (dev.)	11(1.6)	13(2.0)	201(30.9)	5(0.8)	13(2.0)	8(1.2)
10.	Sand Beach (undev.)	117(16.8)	22(3.3)	23(3.5)	215(32.5)	12(1.9)	8(1.2)
11.	Steep Rocky (undev.)	39(5.6)	35(5.3)	53(8.1)	15(2.3)	16(2.5)	13(2.0)
12.	Sand Beach (dev.)	90(12.9)	9(1.4)	121(18.6)	98(14.9)	15(2.3)	8(1.2)
13.	Salt Pond (undev.)	10(1.4)	72(10.9)	8(1.2)	14(2.1)	52(8.0)	46(7.1)
14.	Low Relief (undev.)	49(7.0)	30(4.6)	21(3.2)	19(2.9)	17(2.6)	14(2.1)
15.	Low Relief (undev.)	47(6.7)	43(6.5)	28(4.3)	32(5.1)	9(1.4)	13(2.0)
	Totals	697 (100.0)	658 (100.0)	653 (100.0)	659 (100.0)	648 (100.0)	651 (100.0)

* Question #15 - "If yes (to question #14 - are there any shorelines which should be protected from over-development) which types? (indicate no more than three).

** Question #17 - "Which types of areas might best be used for each of the following types of development?" (indicate up to two)

TABLE 39

ST. THOMAS RESIDENTS' ATTITUDES TOWARDS SHORETYPE PROTECTION AND/OR UTILIZATION

Photo #	Shoretype	Protection*	USE**				
		f (%)	Conserv. f (%)	Recr. f (%)	Resi. f (%)	Comm. f (%)	Ind. f (%)
1	Developed: Harbor	18(3.5)	2(0.6)	9(2.3)	81(20.4)	25(6.7)	11(3.6)
2.	Rocky Beach (undev.)	24(4.7)	37(10.3)	22(5.8)	13(3.3)	4(1.1)	13(4.2)
3.	Salt Pond (undev.)	32(6.3)	37(10.3)	18(4.7)	10(2.5)	17(4.5)	36(11.9)
4.	Sand Beach (undev.)	85(16.8)	59(16.5)	112(29.2)	9(2.3)	4(1.1)	4(1.3)
5.	Developed: Harbor	20(3.9)	23(6.4)	11(2.8)	3(0.8)	73(19.5)	66(21.9)
6.	Sand Beach (dev.)	65(12.8)	8(2.2)	101(26.4)	24(6.0)	12(3.2)	11(3.6)
7.	Steep Rocky (dev.)	14(2.8)	8(2.2)	9(2.3)	23(5.7)	9(2.4)	12(4.0)
8.	Mangroves (undev.)	68(13.5)	73(20.4)	11(2.8)	2(0.5)	9(2.4)	5(1.7)
9.	Sand Beach (dev.)	50(9.8)	7(1.9)	40(10.6)	71(17.8)	5(1.3)	8(2.6)
10.	Developed: Harbor	18(3.5)	13(3.6)	4(1.0)	2(0.5)	108(28.9)	29(9.6)
11.	Steep Rocky (dev.)	23(4.5)	15(4.2)	10(2.6)	41(10.3)	22(5.9)	2(0.7)
12.	Steep Rocky (undev.)	19(3.7)	39(10.9)	11(2.8)	17(4.3)	7(1.9)	18(5.9)
13.	Salt Pond (undev.)	26(5.1)	34(8.5)	9(2.3)	8(2.0)	12(3.2)	41(13.5)
14.	Developed: Harbor	30(5.8)	2(0.6)	13(3.4)	2(0.5)	51(13.6)	46(15.2)
15.	Mangroves (dev.)	17(3.3)	3(0.8)	4(1.0)	92(23.1)	7(1.9)	1(0.3)
	TOTALS	509 (100.0)	360 (100.0)	386 (100.0)	398 (100.0)	374 (100.0)	303 (100.0)

* Question #15 - "If yes (to question #14 - are there any shorelines which should be protected from over-development) which types? (indicate no more than three)

** Question #17 - "Which types of areas, might best be used for each of the following types of development?" (indicate up to two)

TABLE 40

ST. JOHN RESIDENTS' ATTITUDES TOWARDS SHORETYPE PROTECTION AND/OR UTILIZATION

Photo #	Shoretype	Protection*	USE**				
		f (%)	Conserv. f (%)	Recr. f (%)	Resi. f (%)	Comm. f (%)	Ind. f (%)
1.	Steep Rocky (dev.)	0(0.0)	0(0.0)	0(0.0)	12(23.5)	1(2.1)	2(4.4)
2.	Steep Rocky (dev.)	1(1.8)	0(0.0)	0(0.0)	5(9.8)	0(0.0)	3(6.6)
3.	Salt Pond (dev.)	0(0.0)	0(0.0)	1(2.0)	4(7.8)	0(0.0)	7(15.6)
4.	Mangroves (dev.)	2(3.5)	1(2.3)	1(2.0)	0(0.0)	1(2.1)	2(4.4)
5.	Sand Beach (dev.)	6(10.5)	0(0.0)	9(18.0)	0(0.0)	29(60.3)	5(11.2)
6.	Salt Pond (undev.)	1(1.8)	2(4.7)	1(2.0)	1(2.0)	0(0.0)	3(6.6)
7.	Mangroves (undev.)	1(1.8)	12(27.8)	3(6.0)	1(2.0)	1(2.1)	3(6.6)
8.	Rocky Beach (undev.)	2(3.5)	0(0.0)	1(2.0)	2(3.9)	0(0.0)	9(20.2)
9.	Salt Pond (dev.)	2(3.5)	1(2.3)	1(2.0)	17(33.3)	2(4.2)	2(4.4)
10.	Sand Beach (undev.)	12(21.1)	10(23.2)	20(40.0)	0(0.0)	0(0.0)	0(0.0)
11.	Steep Rocky (undev.)	0(0.0)	3(7.0)	0(0.0)	0(0.0)	0(0.0)	2(4.4)
12.	Developed: Harbor	18(31.5)	2(4.7)	0(0.0)	2(3.9)	8(16.7)	7(15.6)
13.	Sand Beach (undev.)	2(3.5)	4(9.3)	11(22.0)	0(0.0)	2(4.2)	0(0.0)
14.	Developed: Harbor	0(0.0)	6(14.0)	0(0.0)	6(11.8)	4(8.3)	0(0.0)
15.	Steep Rocky (undev.)	10(17.5)	2(4.7)	2(4.0)	1(2.0)	0(0.0)	0(0.0)
	TOTALS	57 (100.0)	43 (100.0)	50 (100.0)	51 (100.0)	48 (100.0)	45 (100.0)

* Question #15 - "If yes (to question #41 - are there any shorelines which should be protected from over-development) which types? (indicate no more than three)

** Question #17 - "Which types of areas, might best be used for each of the following types of development?" (indicate up to two)

TABLE 41

ATTITUDES TOWARDS SHORELINE DEVELOPMENT
BY SURVEY SUB-AREA (Question #9)

Sub-island Planning Area	N	Indust.	Comm.	Resi.	Recreat.	Conserv.
		% emphasizing (% emphasizing first)*				
Frederiksted	52	65.4(32.7)	40.4(9.6)	51.9(15.4)	88.4(23.1)	53.8(19.2)
(Harrigan Court)	25	64.0(24.0)	68.0(20.0)	48.0(4.0)	66.0(36.0)	64.0(16.0)
Northside	4	75.0(25.0)	25.0(0.0)	25.0(0.0)	75.0(50.0)	50.0(25.0)
Grove Place	21	42.9(4.8)	61.9(19.0)	51.1(9.5)	85.7(52.4)	52.4(14.3)
Southside	24	45.8(29.2)	45.8(20.8)	66.7(8.3)	73.1(17.4)	66.7(25.0)
East End	21	23.7(14.3)	45.6(9.5)	57.1(14.3)	90.5(42.9)	81.0(19.0)
Christiansted	129	34.1(16.3)	54.3(7.8)	51.9(12.4)	92.2(46.5)	70.5(18.6)
(LBJ Gardens)	31	41.9(22.6)	38.7(25.8)	83.9(32.3)	67.7(12.9)	67.7(6.5)
Central	40	60.0(30.0)	42.5(5.0)	57.4(7.5)	72.5(15.0)	67.5(42.5)
Charlotte Amalie	144	64.5(34.0)	71.5(15.3)	72.9(23.6)	52.8(11.8)	33.4(16.0)
(Kirwin Terrace)	29	62.1(27.6)	31.0(6.9)	75.9(20.7)	65.5(6.9)	65.4(37.9)
West End	39	48.7(20.5)	35.1(10.3)	71.8(5.1)	69.2(28.2)	56.4(33.3)
Northside	28	14.3(7.1)	46.4(25.0)	64.3(3.6)	85.7(14.3)	78.6(50.0)
New Quarter	42	42.8(11.9)	69.0(40.5)	83.3(21.4)	66.7(16.7)	38.1(9.5)
East End	23	47.8(21.7)	30.4(0.0)	56.5(13.0)	65.2(13.0)	92.3(52.2)
Frenchman's Bay	27	29.6(3.7)	33.3(11.1)	63.0(7.4)	92.6(25.9)	74.1(51.9)
Cruz Bay	43	32.6(4.7)	62.8(34.9)	88.4(34.9)	72.1(11.6)	45.2(16.7)
Coral Bay/country	12	41.7(16.7)	58.3(8.3)	66.7(0.0)	50.0(25.0)	66.7((50.0)
TOTALS*	734	47.4(21.4)	53.1(15.3)	65.5(15.9)	73.1(23.9)	57.8(23.9)

* Up to three uses could be emphasized, thus maximum total percentages could equal 300%. First priorities, however, total 100%.

TABLE 42

ATTITUDES TOWARDS ECONOMIC DEVELOPMENT
BY SURVEY SUB-AREA (Question #10)

Sub-island Planning Area	N	Hvy. Mfg.	Light Mfg.	Agricul.	Tourism	Fishing
		% emphasizing (% emphasizing first)*				
Frederiksted	52	38.5(25.0)	59.3(32.7)	88.5(23.1)	69.2(13.5)	44.2(5.8)
(Harrigan Court)	25	52.0(8.0)	72.0(44.0)	96.0(32.0)	20.0(4.0)	60.0(12.0)
Northside	4	50.0(50.0)	50.0(0.0)	100.0(25.0)	75.0(0.0)	25.0(25.0)
Grove Place	21	61.9(19.0)	71.4(52.4)	81.0(23.8)	14.3(0.0)	71.4(4.8)
Southside	24	50.0(33.3)	45.8(16.7)	70.8(12.5)	75.0(25.0)	58.2(12.5)
East End	22	22.7(13.6)	77.3(36.4)	68.2(18.2)	77.3(27.3)	47.6(4.8)
Christiansted	129	26.4(5.4)	72.7(27.3)	93.8(47.3)	50.4(13.2)	56.7(7.1)
(LBJ Gardens)	31	22.6(16.1)	67.7(61.3)	87.1(12.9)	38.7(3.2)	83.9(6.5)
Central	40	47.5(30.0)	65.0(27.5)	80.0(22.5)	62.5(17.5)	45.0(2.5)
Charlotte Amalie	144	22.9(13.2)	74.3(28.5)	94.4(47.2)	43.7(6.9)	60.4(3.5)
(Kirwin Terrace)	29	41.4(6.9)	62.1(17.2)	86.2(44.8)	75.9(27.6)	27.6(0.0)
West End	39	25.6(10.3)	61.0(17.9)	82.1(43.6)	71.8(17.9)	59.0(10.3)
Northside	29	13.8(10,3)	65.4(17.2)	79.3(31.0)	62.1(20.7)	75.9(20.7)
New Quarter	42	16.7(2.4)	54.8(19.0)	73.8(14.3)	73.8(31.0)	78.4(33.3)
East End	23	34.8(8.7)	56.5(8.7)	100.0(56.5)	72.7(13.6)	31.8(13.6)
Frenchman's Bay	27	7.4(0.0)	55.6(11.1)	81.5(44.4)	77.8(40.7)	66.7(0.0)
Cruz Bay	43	14.0(4.7)	32.9(16.7)	79.1(16.3)	76.7(32.6)	71.4(33.3)
Coral Bay/country	11	9.1(0.0)	45.5(9.1)	90.9(54.5)	81.8(27.3)	63.6(9.1)
TOTALS*	735	28.3(12.1)	63.8(26.6)	86.9(35.1)	57.9(16.3)	58.8(9.7)

* Up to three uses could be emphasized, thus maximum total percentages could equal 300%. First priorities, however, total 100%.

TABLE 43

ATTITUDES TOWARDS COASTAL RECREATIONAL OPPORTUNITIES BY SURVEY SUB-AREA (Question #13)

Sub-island Planning Area	N	Public Beach Access	Public Beach Fac.	Boating Fac.	Fishing Piers	Underwater Park	Waterfront Park
		% emphasizing*					
Frederiksted	52	69.2	65.4	23.1	42.3	32.7	67.3
(Harrigan Court)	25	4.0	8.0	32.0	92.0	88.0	76.0
Northside	4	100.0	75.0	25.0	25.0	0.0	75.0
Grove Place	21	57.1	47.6	9.5	81.0	52.4	52.4
Southside	24	58.3	79.2	54.2	41.7	8.3	58.3
East End	22	40.9	50.0	63.6	40.9	18.2	77.3
Christiansted	127	81.9	59.8	22.0	33.9	24.4	77.2
(LBJ Gardens)	31	90.3	83.9	6.5	19.4	9.7	90.3
Central	40	65.0	65.0	35.0	50.0	17.5	57.5
Charlotte Amalie	143	44.1	51.0	31.5	70.6	31.5	67.1
(Kirwin Terrace)	29	89.7	86.2	17.2	24.1	17.2	51.7
West End	36	55.6	58.3	33.3	55.6	30.6	58.3
Northside	29	51.7	75.9	51.7	34.6	44.8	41.4
New Quarter	41	56.1	58.5	39.0	36.6	31.7	75.6
East End	23	87.0	52.2	13.0	21.7	43.5	69.6
Frenchman's Bay	27	51.9	55.6	33.3	33.3	37.0	70.4
Cruz Bay	42	38.1	64.3	45.2	52.4	28.6	71.4
Coral Bay/country	10	50.0	50.0	50.0	50.0	0.0	80.0
TOTALS*	726	60.1	59.4	30.7	47.5	29.8	68.3

* Up to three uses could be emphasized, thus maximum total percentages could equal 300%.

TABLE 44

PERCEPTIONS OF THE V.I.'s THREE MOST IMPORTANT COASTAL PROBLEMS BY SURVEY SUB-AREA (Question #18)

Sub-island Planning Area	N	Beach Access	Water Pollution	Flooding	Loss of Natural Areas	Sand Removal	Less Fish
		% considering important*					
Frederiksted	51	33.3	80.4	13.7	72.5	56.9	43.1
(Harrigan Court)	25	24.0	76.0	4.0	84.0	56.0	66.0
Northside	4	75.0	50.0	25.0	0.0	100.0	50.0
Grove Place	21	42.9	76.2	0.0	81.0	61.9	38.1
Southside	23	60.9	65.2	4.3	54.5	59.1	54.5
East End	22	27.3	72.7	4.5	47.6	90.9	45.5
Christiansted	128	74.2	49.6	3.9	72.1	58.3	42.6
(LBJ Gardens)	30	80.0	76.7	13.3	46.7	73.3	10.0
Central	40	42.5	90.0	20.0	67.5	40.0	40.0
Charlotte Amalie	137	25.5	86.2	62.0	23.2	59.9	34.1
(Kirwin Terrace)	29	69.0	96.6	3.4	48.3	69.0	13.8
West End	38	42.1	94.7	8.1	40.5	55.6	47.2
Northside	29	27.6	79.3	6.9	65.5	58.6	58.6
New Quarter	41	29.3	90.2	19.5	63.4	53.7	39.0
East End	23	39.1	69.6	8.7	78.3	26.1	43.5
Frenchman's Bay	27	25.9	88.9	7.4	77.8	66.7	25.9
Cruz Bay	42	69.0	67.4	23.3	78.5	36.5	23.8
Coral Bay/country	12	25.0	75.0	41.7	50.0	83.3	8.3
TOTAL*	722	45.8	76.3	20.2	57.6	57.9	37.6

* Up to three problems could be mentionned, thus maximum total percentages could equal 300%.

TABLE 45

COMPLETE TABULATION OF RESPONDENTS' COMMENTS*

St. Thomas

Issue-oriented comments:

1. There should be no private ownership of beaches.
2. All shoreline areas should be protected.
3. Development is the Territory's biggest coastal problem.
4. Protect Magens Bay!
5. Sailing is a major tourist attraction.
6. Restrict new development in areas which are already highly developed.
7. Destruction of historic and archaeological resources is a major problem.
8. Shorelines should be protected by requiring development (especially industry) to be set back from the water.
9. The Virgin Islands has the potential to be the underwater capital of the world.
10. Camping facilities would be a good coastal recreational development.
11. Providing for one's family is the most important problem in the Territory.
12. Protect the shoreline for the people!
13. Our coastal waters are our greatest resource, and provide the basis for our economy.
14. All coastal areas should be protected from overdevelopment.
15. Promote the rum industry.
16. Free the beaches.
17. Over-development in Cowpet Bay.
18. Keep the beaches clean.
19. Industrial or residential use of the coast should not be encouraged.
20. No more industry.
21. No more conservation.
22. Our waters are beautiful -- prevent pollution.
23. Develop watersports programs: swimming, snorkeling, sailing & waterskiing.
24. Clean up the beaches.
25. People are the coast's worst enemy.
26. No more coastal industry; don't overdo coastal commerce and locate residential development inland.
27. I hate to see hotels restrict beach access to native Virgin Islanders.
28. New industrial development should go inland.
29. Development of coastal resources should be directed towards the creation of jobs.
30. We need to encourage the shipping industry.
31. No more industry along the shoreline.
32. Above all else, preserve the mangrove lagoon.
33. Mariculture and fish hatcheries should be developed.
34. There is too much boating on the East End; this is causing water pollution.
35. Preserve natural areas and beach access.
36. Keep our waters beautiful!
37. Create waterfront parks -- old people need a place to relax too!
38. Commercial and industrial development should be encouraged at Red Hook.
39. Free the beaches -- too many are privately owned.
40. Keep our waters pretty.
41. All of the shoreline is beautiful -- and should be protected from over development.
42. Develop picnic facilities on the cays.

Comments on the survey:

1. Going to the people is an excellent idea.
2. I am glad to see that coastal planning is being done.
3. Action!
4. Make survey findings public.
5. We need to study the long-range implications of growth.
6. The survey is a good idea, but the questions beat around the bush.
7. The islands are small and time is short.
8. I hope the survey is fruitful and the results will be made available.
9. The Legislature does not show enough interest in this kind of thing.
10. Publish the results.
11. It is about time we start protecting the Territory's natural resources and beauty.
12. There is a lot of work to be done.
13. Surveys! Do something!

14-27. The survey is a good idea.

St. Croix

Issue-oriented comments:

1. Create a shoreline drive from Christiansted to the East End.
2. The shoreline should be developed.
3. I am very concerned about coastal ecology.
4. Marinas and coastal industry should be encouraged.
5. Many residents have no means of getting to the beach. Public transportation should be improved.
6. Shoreline protection from over development is needed to preserve public access.
7. Shoreline areas should be protected so natives and tourists both can enjoy them.
8. Littering of beaches is a major problem.
9. Encourage marine research.
10. I hope something will be done with waterfront areas.
11. Safety is a major coastal problem.
12. Protecting shoreline areas from over development is for the good of the community.

Comments on the survey:

1. This survey is a very good idea

2-28. The survey is very interesting and/or informational.

29&30. I hope the program materializes.

St. John

Issue-oriented comments:

1. Protect Mary Point
2. Protect all shorelines from over development.
3. Second home development is acceptable, but no condominiums!

CROSS-TABULATIONS RELATED TO CHANGES IN TERRITORIAL

POPULATION COMPOSITION

TABLE 46

EDUCATION AS ASSOCIATED WITH LENGTH OF RESIDENCY*

Education	0-5 Yrs. Here	6-15 Yrs. Here	16+ Yrs. Here
Elementary	1.8% (14.5)	6.8% (24.0)	18.7% (31.7)
High School	4.5 (34.9)	10.1 (36.1)	24.9 (42.1)
Advanced	6.5 (50.6)	11.2 (39.9)	15.5 (26.2)
Totals	12.8 (100.0)	28.1 (100.0)	59.1 (100.0)

TABLE 47

AGE AS ASSOCIATED WITH LENGTH OF RESIDENCY*

Age	0-5 Yrs. Here	6-15 Yrs. Here	16+ Yrs. Here
18-39 Yrs.	4.3% (33.7)	16.2% (57.1)	27.9% (47.5)
40-59 Yrs.	7.7 (60.3)	9.7 (34.2)	23.2 (39.4)
60+ Yrs.	0.8 (6.0)	2.5 (8.7)	7.7 (13.1)
Totals	12.8 (100.0)	28.4 (100.0)	58.8 (100.0)

* Figures are frequency percentages of the total sample. Parentheses indicate frequency percentages of each residency category.

CROSS-TABULATION OF NON-PHOTO QUESTIONS
WITH EDUCATIONAL DATA

TABLE 48

ATTITUDES TOWARD OVER-ALL SHORELINE DEVELOPMENT
BY EDUCATIONAL LEVELS*

1st Priority	Ed. Level	St. Croix	St. Thomas	St. John
Industry	Elementary	42.7%	43.8%	50.0%
	High School	40.0	39.7	25.0
	Advanced	17.3	16.4	25.0
N=		75	12	4
X^2=		11.86**	2.72	
Commerce	Elementary	41.5%	28.6%	26.7%
	High School	36.6	46.9	53.3
	Advanced	22.0	24.5	20.0
N=		41	49	15
X^2=		4.40	1.30	
Residential	Elementary	33.3%	24.5%	28.6%
	High School	40.0	62.3	57.1
	Advanced	26.7	13.2	14.3
N=		45	53	14
X^2=		1.13	10.22**	
Recreation	Elementary	19.7%	19.6%	16.7%
	High School	38.5	39.1	50.0
	Advanced	41.9	41.3	33.3
N=		117	45	6
X^2=		6.66**	1.88	
Conservation	Elementary	16.9%	11.1%	38.5%
	High School	36.6	34.4	30.8
	Advanced	46.5	54.4	30.8
N=		71	90	13
X^2=		6.66**	22.53**	

* Question #9, first choice responses only, by question #21.
** Indicates X^2 values for which $p \leq 0.05$

TABLE 49

ATTITUDES TOWARDS ECONOMIC DEVELOPMENT
BY EDUCATIONAL LEVEL*

1st. Priority	Ed. Level	St. Croix	St. Thomas	St. John
Heavy Man.	Elementary	37.5%	31.0%	50.0%
	High School	48.2	44.8	25.0
	Advanced	14.3	24.1	25.0
N=		56	29	2
X^2=		9.43**	1.04	
Light Industry	Elementary	28.4%	27.3%	14.3%
	High School	33.6	45.5	85.7
	Advanced	37.9	27.3	0.0
N=		116	66	7
X^2=		1.37	0.70	
Agriculture	Elementary	22.4%	26.4%	41.7%
	High School	39.3	44.2	33.3
	Advanced	38.3	29.5	25.0
N=		107	129	12
X^2=		1.88	0.42	
Tourism	Elementary	28.9%	18.2%	26.7%
	High School	28.9	38.2	40.0
	Advanced	42.2	43.6	33.3
N=		45	55	15
X^2=		2.08	3.60	
Fishing	Elementary	29.2%	16.7%	33.3%
	High School	50.0	43.3	40.0
	Advanced	20.8	40.0	26.7
N=		24	30	15
X^2=		2.01	1.38	

* Question #10, first choice responses only, by Question #21.
** Indicates X^2 values for which $P \leq 0.05$.

TABLE 50

ATTITUDES TOWARDS SHORELINE PROTECTION
BY EDUCATIONAL LEVELS*

Response	Ed. Level	St. Croix	St. Thomas	St. John
Yes	Elementary	16.0%	16.2%	27.7%
	High School	38.5	42.9	48.9
	Advanced	45.5	40.9	23.4
N=		231	198	47
No	Elementary	32.1%	33.3%	0.0%
	High School	53.6	33.3	0.0
	Advanced	14.3	33.3	100.0
N=		28	21	1
No opinion	Elementary	58.6	22.9	100.0
	High School	32.2	64.6	0.0
	Advanced	9.2	12.5	0.0
N=		87	48	4
X^2=		71.67**	17.15**	12.17**

* Question #14 by question #21.
** Indicates X^2 values for which $p \leq 0.05$.

TABLE 51

PERCEPTIONS OF COASTAL PROBLEMS
BY EDUCATIONAL LEVELS*

Problem	Ed. Level	St. Croix	St. Thomas	St. John
Beach Access	Elementary	26.0%	26.5%	23.3%
	High School	40.6	39.2	60.0
	Advanced	33.3	34.3	16.7
N=		192	102	30
X^2=		0.47	0.72	
Water Pollution	Elementary	26.7%	21.9%	33.3%
	High School	40.1	43.4	38.9
	Advanced	33.2	34.7	27.8
N=		232	265	36
X^2=		0.29	1.44	
Flooding	Elementary	10.7%	36.2%	42.9%
	High School	64.3	46.8	42.9
	Advanced	25.0	17.0	14.3
N=		28	94	14
X^2=		8.43**	11.89**	
Loss of Natural areas	Elementary	28.1%	17.3%	18.9%
	High School	34.6	38.8	56.8
	Advanced	37.2	43.9	24.3
N=		231	139	37
X^2=		1.81	9.91**	
Sand Removal	Elementary	30.2%	22.9	32.0
	High School	36.1	46.3	40.0
	Advanced	33.7	30.9	28.0
N=		205	175	25
X^2=		0.70	0.63	
Less Fish	Elementary	33.1	22.0	45.5
	High School	37.3	45.9	27.3
	Advanced	29.6	32.1	27.3
N=		142	109	11
X^2=		2.11	0.48	

* Question #18 by question #21
** Indicates X^2 values for which $p \leq 0.05$.

DATA AVAILABLE FOR INSPECTION IN THE VIRGIN ISLANDS PLANNING OFFICE

Computer print-outs of survey data may be inpected at the St. Thomas (Sub-base) office of the Virgin Islands Planning Office. Available area:

1. A complete compilation of responses (sample and substantive questions) by island and by Territory.
2. Cross-tabulations of responses to non-photo questions (#9-14, 16, 18) with demographic variables by island.
3. Cross-tabulation of selected demographic variables:
   - Years here X education)
   - Years here X age) by island
   - Sex X age)
   - Education X occupation for the Territory

OTHER DATA OBTAINABLE

Further analysis of coded survey responses is possible using the Standard Statistical Package for the Social Sciences which is on line at the Department of Finance Computer Center. Those most likely to be of interest include:

1. A complete compilation of responses by island survey sub-area.
2. Cross-tabulation of responses to photo questions (#1-8, 15, 17) with demographic variables.
3. Cross-tabulations of other demographic variables by island or for the Territory.
4. A variety of statistical analyses including correlation and regression.

Appendix D

NEWSPAPER SURVEY DATA: Tabulations for all Questions

TABLE 52

DEMOGRAPHIC DATA FOR NEWSPAPER RESPONDENTS*

	St. Croix	St. Thomas	St. John	Territory
Total Respondents	69	82	3	154
Question				
1. Sex				
Male	39	49	2	90(58.4%)
female	30	33	1	64(41.6)
2. Age				
up to 19 yrs.	1	3	0	4(2.7%)
20-29 yrs.	11	18	1	30(20.0)
30-39 yrs.	22	25	0	47(31.3)
40-49 yrs.	16	14	1	31(20.7)
50= yrs.	18	20	1	38(25.3)
3. Location of home - Response specificity varied so much that coding was impractical.				
4. Occupation				
white collar	42	56	2	100(66.7%)
blue collar	4	3	0	7(4.7)
Service	7	9	1	17(11.3)
housewife	4	2	0	6(4.0)
student	8	7	0	15(10.0)
retired	1	2	0	3(2.0)
none	2	0	0	2(1.3)

* Data are response frequencies, with frequency percentages for the total sample in parenthesis.

PERSONAL USE OF COASTAL AREAS

TABLE 53

COASTAL ACTIVITIES (Question #5)

Activity	Number of Users				aver. times per month
	St. Croix	St. Thomas	St. John	Territory	
go to the beach	67	72	3	139	7
go fishing	25	24	3	49	3-4
go boating	34	50	3	84	4-5
waterfront marketing	16	24	2	40	4-5
% responding	98.6	100.0	100.0	99.4	

TABLE 54

BEACH ACTIVITIES (Question #8)

Activity	Number of Participants			
	St. Croix	St. Thomas	St. John	Territory
swim	48	58	2	108
snorkle	20	15	2	37
picnic	14	17	1	32
run	13	9	0	22
lime	8	13	0	21
fish	7	2	0	9
% responding	98.6	98.8	100.0	98.7

TABLE 55

BEACH USE (Questions 6, 7, 10)

St. Croix

Beach	Used by	Used most often by	Not used by
Davis Bay	22	3	6
Cramer Park	22	2	3
Sandy Point	17	3	9
Tague Bay/reef/yacht club	11	5	1
Green Cay	11	2	
Buck Island	10	4	
Cane Bay	10	4	2
Frederiksted	9	5	
Jack Bay	8		2
Pelican Cove	7	2	
Hapenny Bay	6	4	1
Beach Hotel	5	2	
Tamarind Reef	5	1	
Butler Bay	5		2
Sprat Hall	4	3	2
Target Wall	4	2	1
Boiler Bay	4	1	
LaGrange	3	3	
Sugar Beach	3	2	
Manchenil Bay	3	1	1
Grapetree Bay	3		
East End Bay	3		1
Southgate	3		
Gentle Winds	3		
Salt River	2		
Rust-up-Twist	2	1	
LaVallee	2	1	
St. Croix Country Club	2	2	2
Williams Beach	2		
Stoney Ground	2		2
Hope & Carlton	2		
Rod/Robin Bays	2	1	
Great Pond Bay	2	1	
Isaacs Bay	10	2	1
Pull Point	2		
Buccaneer Hotel	2	1	3
St. Croix by the Sea	2		
Mill Harbor	1		
Protestant Cay	1		2
Altona Lagoon	1	1	1
Prune Bay	1	1	
Smugglers Cove	1		
Sunset Beach	1	1	1
Coakley Bay	1	1	3
Anally Bay	1		3
Limetree/Virco			3
Colombus Bay			2
Gallows Bay			1
Solitude Bay			1
% responding	85.5	87.0	65.2

Beaches Used: St. Thomas

Beach	Used by	Used most by	Not used by
Magens Bay	67	27	1
Coki Point	36	6	4
Sapphire Bay	26		5
Lindberg Bay	22	4	
Brewers Bay	20	4	1
Hull Bay	19	6	4
Vessup Bay	16	6	
Secret Harbor	16		3
Limetree Bay	14	5	1
Morning Star Beach	14	4	8
Cowpet Bay/yacht club	12	7	1
Mandal Bay	10		10
Stumpy Bay	10		10
Bolongo Bay	8	3	8
Bluebeard's Beach	7		2
Trunk Bay, St. John	6		
Scott Beach	5		
Bordeaux Bay	5		3
Neltjeberg	4		4
Dorothea	3		6
Skinny Beach	3		1
Smith Bay	2		1
Pineapple Beach	2		2
Caneel Bay, St. John	1		1
Tutu Bay	1		3
Sunsi Bay	1		
Botany Bay	1		4
St. James	1		
Cinnamon Bay, St. John			
Francis Bay " "			
Honeymoon Bay," "			
Fortuna Bay			1
Santa Maria Bay			1
Perseverence Bay			1
Nazareth Bay			1
%responding	98.8	92.7	62.2

Beaches Used: St. John

Beach	Used by	Used most By	Not used by
Trunk Bay	3	1	
Hawksnest Bay	1	1	
Cinnamon Bay	1		
Chocolate Hole	1		
Lameshur Bay	1		
Salt Pond Bay	1		
Rendez-vous Bay	1		
Magens Bay, St. Thomas	1		
Coki Point " "	1		
Bluebeard's Beach, St. Thomas	1		
Maho Bay			1
Peter Bay			1
Denis Bay			1
% responding	66.7	66.7	100.0

TABLE 56

EXISTENCE OF UNUSED, BUT DESIRED BEACHES (Question #9)

	St. Croix	St. Thomas	St. John	Territory
yes	45	51	1	97
no	23	29	1	53
% responding	98.6	97.6	66.7	97.4

TABLE 57

REASONS FOR NOT USING PARTICULAR BEACHES (Question #11)

Reason	St. Croix	St. Thomas	St. John	Territory
no road access	14	25	0	39
exclusively private	13	22	1	36
no facilities	8	12	0	20
safety	12	5	0	17
transportation	5	6	0	11
expense	4	5	0	9
% responding	65.2	62.2	33.3	63.0

COASTAL DEVELOPMENT

TABLE 58

MOST IMPORTANT CURRENT SHORELINE USES (Question #12)

Use	St. Croix	St. Thomas	St. John	Territory
Industry	19	2	0	21
Cruise ships	12	30	0	42
Public beaches	41	67	3	111
Hotels/condominium	22	18	0	40
Freight docks	9	9	0	18
Marinas	20	29	1	50
Shops/restaurant	3	2	0	5
Conservation/parks	44	60	3	107
Public utilities	2	6	0	8
% responding	94.2	96.3	100.0	95.5

TABLE 59

ADEQUACY OF CURRENT SHORELINE USES (Question #13)

Use	St. Croix	St. Thomas	St. John	Territory
Marinas	8	68	47	10
Hotel/condominiums	43	75	19	15
Conservation/park	1	12	123	2
Industry	42	64	20	8
Public beaches	0	49	82	1
Freight docks	9	64	31	14
Shops/restaurants	17	80	18	10
Utilities	14	65	22	24
Cruiseship docks	7	71	36	3

% responding territory wide = 95.5

TABLE 60

SHORETYPES SUITED FOR INTENSIVE DEVELOPMENT (Question #14)

Shoretype	St. Croix	St. Thomas	St. John	Territory
Sand beaches	14	7	0	21
Low rocky relief	24	27	1	52
Mangroves	12	13	0	25
Salt ponds	16	17	0	33
Gravel & rocky beaches	12	29	0	41
Steep rocky shores	22	25	2	49
Developed shores	25	33	0	58
% responding	82.6	89.0	66.7	85.7

TABLE 61

SHORETYPES NEEDING PROTECTION FROM INTENSIVE DEVELOPMENT (Question #15)

Shoretype	St. Croix	St. Thomas	St. John	Territory
Sand beaches	51	61	3	115
Low rocky relief	8	7	1	16
Mangroves	42	42	3	87
Salt Pond	43	33	3	89
Gravel & rocky beaches	12	15	1	28
Steep rocky relief	11	9	1	21
Developed shores	13	13	0	26
% responding	85.5	89.0	100.0	87.7

TABLE 62

SHORETYPE NEEDING PROTECTION FROM ALL DEVELOPMENT (Question #16)

Shoretype	St. Croix	St. Thomas	St. John	Territory
Sand beaches	45	51	3	99
Low rocky relief	11	9	0	20
Mangroves	41	34	3	78
Salt pond	45	28	3	76
Gravel & rocky beaches	11	14	0	25
Steep rocky shores	16	12	1	29
Developed shores	9	6	0	15
% responding	82.6	87.8	100.0	85.7